Industrial FINISHING

Reg. U. S. Pat. Office

Devoted to Product Finishing in the Factory

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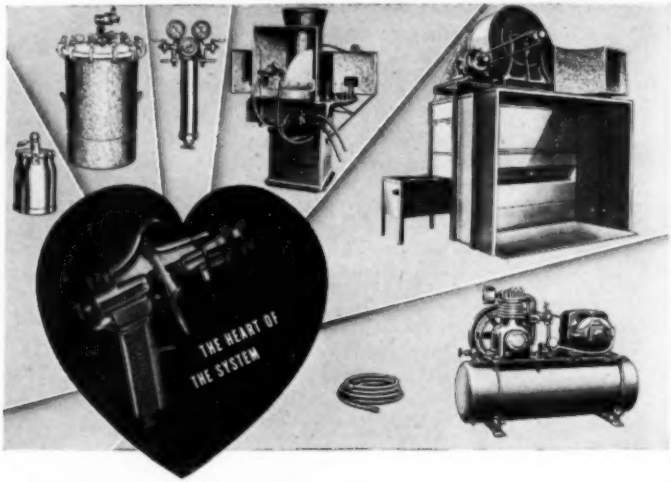

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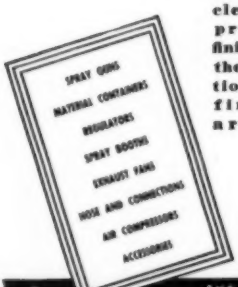
You will doubtless find, in the standard DeVilbiss line, exactly the equipment to meet your needs. But if your finishing problems are highly individualized, our engineers will be glad to consult with you and plan an installation especially designed to fit your particular requirements.



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Letters from Readers

OF INDUSTRIAL FINISHING

Editor's Note—These letters have been promptly answered and all of the inquiries have been referred to advertisers in the magazine. .They are published here to indicate or suggest certain interesting trends of thought and activity in the industry, and to encourage further inquiries, comments and suggestions. The names and addresses of firms or individuals whose letters are published here may be had by writing to this office, or letters sent to them in care of this office will be forwarded at once.

For Stencil Cutting

In the February issue of INDUSTRIAL FINISHING, on page 19, there is illustrated new Bi-Cutters for stencil cutting, Nos. 5, 6 and 7. Will you please advise us where these may be obtained?—K. & Co.

These are products of the Moore Air Brush Co., 4609 Grace St., Chicago, Ill.—Ed.

Finish for Cellulose Acetate Sheets

We are very much interested in finding new finishes which may be applied to Lumarith (cellulose acetate sheets) to be used for lamp shade material. We are also interested in metal and wood finishes which may be inexpensively applied to these sheets.—H. H. Co.

Venetian Blind Article

We read with a great deal of interest the article by Mr. Berkeley S. Vaughan, Supt. of the Wheeler Screen Co. (Dec. 1936 issue). If this gentleman has no objection, we would appreciate any information that he might have concerning racks. We notice that he mentioned racks designed so that both sides of slats may be sprayed by turning the racked slats as an entirety, so that it is not necessary to turn each slat. We wish to compliment Mr. Vaughan in having worked out such a system. —G. T. Co. (Venetian Blinds).

We were very much impressed by an article in INDUSTRIAL FINISHING, for December, 1936, and are writing to secure your permission to reproduce this article for our own use.

The article we wish to use is the one entitled: "Venetian Blind Finish" by Berkeley S. Vaughan (pages 38-46). It is our desire to mimeograph probably 50 copies, to be given to our salesmen and to our better jobbing accounts. Your magazine will, of course, be given full credit for the article on our copy, and the copies are not to be sold, but given away.

If this is satisfactory to you, kindly let us know at your early convenience, as we would like to produce and distribute copies of this article. You may be sure we will greatly appreciate your courtesy in this regard. —X. Mfg. Co. (Paint Spraying Equipment and Accessories).

We are pleased to grant permission for reprinting this article, providing a credit line is included to the effect that it is reprinted from INDUSTRIAL FINISHING.—Ed.

Dipping Machine

We noticed in the February 1936 issue of INDUSTRIAL FINISHING, about a dipping machine manufactured by Northern Machine Mfg. Co. We are interested in such a machine to dip

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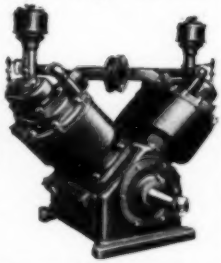

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small wood handles. Will you please send us the address of this firm?—S. P. Co. (Cob and Hickory Pipes and Bone Bits).

The company is located in Wausau, Wis.—Ed.

Lacquer Base Ink

Upon looking through the January 1937 issue of INDUSTRIAL FINISHING, we find, on pages 5 and 6, an inquiry from M. J. Co. for an ink with a lacquer base having a good opaque finish. We have an ink which we believe would be just what the prospect requires.

For your information, we handle an ink with a lacquer base. This ink, when used for printing on a lacquer finished or celluloid article, will adhere very well and if the article is not subjected to a great deal of friction, then it need not be finished with a protective coat of lacquer. We also handle a line of printing inks which do require a lacquer coat.

We will be glad if you will keep us in mind in the event that you have further inquiries for special inks. We sell these in conjunction with our printing equipment, and we also sell them to concerns who have equipment with which our inks will work to satisfaction.—Apex Products Corp., 445 W. 45th St., New York.

Stripping Off Nickel Plating

We do considerable nickel and brass plating in our plant and occasionally have nickel-plated pieces brought in from around the city to be replated. We have to strip all the nickel off of these pieces, and are now doing this with an emery buff wheel. Isn't there some method by which we can take off the old nickel quicker and cheaper than by buffing?—H. W. Mfg. Co. (Drapery Hardware).

Imitation Grained Leather

The imitation leather grained finish, described by W. M. Torrence, in your February issue (pages 15, 16) calls to mind the Hilo No. 948 Black Leather Grain Enamel which was described in the third edition of our Hilo Bulletin No. 1, Black Enamels and Japans, published in April, 1919.

By mixing the sawdust into the first coat of black, the operations are simplified and, since a good high grade rubber finish black is used and

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you are not entirely satisfied return the can at our expense for full refund.

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P. S. Almost forgot to tell you that Absolute Sand Sealer is economically priced.

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baked on, the finish then only needs a light sanding with fine sandpaper, and a light rubbing off with a slightly oily rag. If preferred, after sanding, the finish could just be dusted off and then a very thin coat of rubber japan or rubber finish lacquer sprayed over it.—Carl J. Schumann, President of Hilo Varnish Corp.

Smith's Articles OK

We have read with a great deal of interest the articles by Mr. W. T. Smith on the finishing of radio cabinets, which have been running in INDUSTRIAL FINISHING for the last few months. We are wondering if the article will be presented for use in the form of a pamphlet, or a series of tear sheets? If so, we would like to secure a number of copies of same and would appreciate your advice.—Sterling Products Co.

We had not thought of publishing Mr. W. T. Smith's series of articles about "Finishing Radio Cabinets" in pamphlet form, although we have had a number of letters commenting favorably upon this series of articles. —Ed.

Silk Screen Stencils

We notice a letter from one of your readers in January issue, page 5, asking for a source of supply for silk screen stencils. It is our privilege at present to serve many companies throughout the country with silk screen stencils, and we would sincerely appreciate your adding our name to your list of sources for this product. — Dura-Products Mfg. Co., Canton, Ohio.

We notice that almost every month there is an inquiry in your magazine concerning silk screen work. May we call to your attention that we are experts in the silk screen field and handle all materials for same? We are in a position to give advice on any technical problem . . . . —S. D. Jacobs Co., 749 Sixth Ave., New York, N. Y.

Wonderful Magazine

. . . . I am thanking you very kindly for your favor in sending me December issue of INDUSTRIAL FINISHING. I wouldn't have missed the "Major Review" for anything. I think this magazine is the most wonderful magazine in the world. Anyone interested in finishes, new mate-

"The meeting will please come to order"

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It won't hurt the finish if
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rials, etc., can keep posted and know what is going on and what's new. "Major Review" is simply a knockout and worth a good many dollars.

Congratulations to the fine articles written by these good men who rank high in the finishing world. It takes "selfishness" out of the dictionary.—Roy Charles.

Coated Sheet Metal

Can you advise us where we can secure coated stock on 26-gauge metal that will withstand a fairly deep drawing and forming operation? We enclose an illustration of the article in actual size, the depth of the cup being 7/8-in. — J. Mfg. Co. (Metal Specialties).

Waterproof Sandpaper

We receive from time to time your publication entitled INDUSTRIAL FINISHING, and the thought has just occurred to us that you could furnish us with a list of manufacturers in the United States of abrasive paper and cloth. We are particularly interested in picking a source of supply for waterproof paper, and would appreciate any information you can give us by return mail.—L. S. (Beds and Bed Springs).

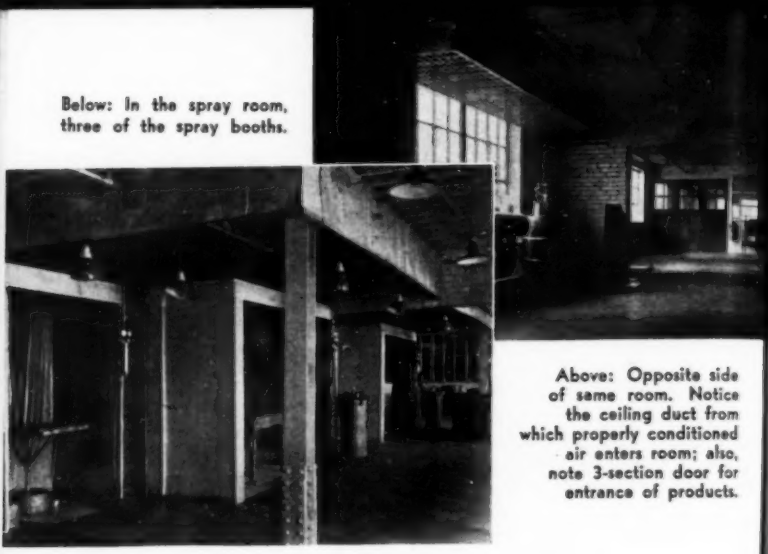
To Bleach Oak

We are interested in a bleaching solution suitable for application on oak. If you can forward this application to some firm who manufactures the above bleach, preferably someone on the Pacific Coast, we would appreciate it. Of course, if possible, we would like a bleach that will dry over night and which will not leave any deposit on the wood, making it necessary for an additional operation.

In your listed products in the January Major Review, we do not find any mention of oak bleaching, so we are writing you for aid, and would appreciate a small sample from the manufacturer.

If you know of anyone in a position to give us some information on bleaching a rattan into a lighter shade, will you please give us his or their name?—C. Rattan Works.

(Continued on page 75)



Below: In the spray room, three of the spray booths.

Above: Opposite side of same room. Notice the ceiling duct from which properly conditioned air enters room; also, note 3-section door for entrance of products.

Air-Conditioned Finishing

BY W. H. ROHR

A SPRAY ROOM and drying room that have a modern engineered air-conditioning and ventilating system are in successful operation in one of the plants of Hillenbrand Industries at Batesville, Ind. The rooms adjoin each other on the third floor of a new brick factory building, and each one measures about 30½ x62-ft.

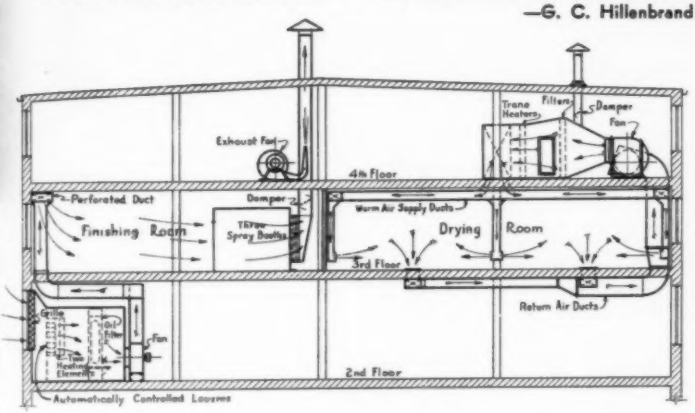
Here we see practically air tight rooms wherein the four characteristics of air that are most important to finishers—cleanliness, temperature, humidity and circulation—are under absolute automatic control at all times. In other words the finishers are always assured of clean fresh air, and it can be maintained uniform or can be varied when desired as to temperature, humidity and circulation to suit the requirements of satisfactory and economical finishing.

No flying dust or lint, no undesirable drafts, no hot or cold areas, no excessive humidity or dryness, and no fog or mist to upset finishing schedules or interfere in any way with the maximum performance of materials and equipment. Once a satisfactory finishing schedule is worked out and placed in operation, it can be maintained indefinitely, regardless of outside weather conditions.

A cross-sectional view of the second, third and fourth floors of

"NOT AN EXTRAVAGANCE . . . . A PROFITABLE INVESTMENT"

—G. C. Hillenbrand



Cross-sectional view of three floors, showing location of the complete air conditioning equipment for a spraying room and drying room — By courtesy of The Mahon Company, Detroit, Mich.

Is Here . . .

the building, as shown herewith, illustrates the relative location of the spraying and drying rooms and the position of the principal equipment therein. Two views, taken within the spray room, are shown above. The spray room contains three spray booths and considerable space for the temporary storage and movement of wood furniture and wood caskets before and after spraying. Doors to the spray room are kept closed except when in use, and all tilting panels in the steel sash are padlocked shut.

A slight excess of air pressure is maintained within the spray room so that when any of the service doors are opened, there is a very mild movement of air from the spray room outward to the adjoining room, instead of vice versa, hence no dust or lint can enter the spray room through an open door.

Clean conditioned air is introduced into the spray room through a system of ducts, at a rate which is more than sufficient to compensate for what air is drawn out through spray booth exhausts. Referring to the cross-sectional view, we see that air enters the building through a grille placed in a window opening and passes through louvers which are automatically controlled by the steam pressure in the coils of the heating elements. When the steam pressure drops below normal the louvers close, reducing the amount of air entering the system. The air then passes through two heat-

ing elements, one of which is automatically controlled to maintain proper spray room temperature at all times. The other coil operates at full steam pressure to eliminate the possibility of the coils freezing in severe weather.

After being heated, the incoming air passes through an oil filter which removes any particles of dust before it enters the fan for delivery into the spray room. The tempered and filtered air is discharged into the spray room through a long perforated duct which provides an even distribution and maintains a supply of clean warm air to the spray room at slightly above the capacity of the spray booth exhaust fans.

Freshly sprayed furniture and caskets are moved into the drying room where the air is filtered and recirculated, the temperature and humidity being controlled at all times by automatic devices. Recording instruments on the wall of the spray room indicate the temperature and humidity of air within the drying room.

The sanding of first and intermediate coats, and the rubbing of the final finish—these operations are performed in a room adjoining the drying and spraying rooms.

As may be seen by referring to the cross-sectional drawing, the air for service in the drying room is continuously filtered and recirculated. It is passed through heating and humidity units and distributed through ducts to various points in the drying room where it circulates around the products in process and then returns by way of floor outlets and ducts to the air-conditioning unit located on the fourth floor.

Recording instruments on wall between spray room and drying room reveal temperature and humidity conditions within the drying room.

This air-conditioning and ventilating equipment has been in service in the Hillenbrand plant since August, 1936, and is operating satisfactorily. Results: Uniformly faster finishing schedules; less sanding and rubbing; a clearer and more uniformly high-grade finish; no rejects or do-overs; better satisfied workmen and customers.

Rust Proof Paints

"The Rust-Pruf" paints in all colors and for all purposes are listed, priced and described, with instructions for using same, in literature recently released by the Rust-Pruf Co., 549 Washington Blvd., Chicago, Illinois.

Boynton Products Organized To Make Finishing Materials

An announcement from Boynton Products, Inc., signed by Mr. James I. Spaugh, President, states that this newly organized firm is located in Shelbyville, Ind., and that the products manufactured by this company are the result of more than 15 years of experimentation and actual experience in finishing rooms, by Mr. Fred Boynton, Vice President of the company. The outstanding result of these experiments is a 2-coat finish that has a remarkable depth of color and is very tough. The company invites any problems that finishing rooms may have. Products include a complete line of varnishes, lacquers, enamels, sealers, synthetics and paints.

What's the Matter

WITH OUR FURNITURE FINISHES?

by George D. Watt

Furniture repair finisher for a large storage company reveals some of the experiences and troubles he has encountered in restoring finishes that go bad on stored and slightly used wood furniture. He offers a number of suggestions and recommendations for improved factory finishing.

AS A BOY I signed up as an apprentice to learn the cabinet-making trade—for a period of five years—with the result that I learned the business from the ground up.

I have worked with every known wood in the world, including some of the rare woods that you do not see on the market today, and many that have been sold under different names from time to time. During my apprenticeship I was taught a practical knowledge of the finishing trade.

In the cabinet shop we were trained to draw our hand over or across a flat surface to feel the slightest bump or unevenness which you could not detect by using a straight-edge. Also, veneered flat surfaces were planed with a smoothing plane instead of the scraper. All pieces except those to be painted were thoroughly sponged with water so as to raise the grain of the wood and, after drying, these surfaces were sanded flat and smooth. The water was never stinted; plenty was put on, regardless of whether the piece was solid or veneered, with the result that the finisher had little to worry about any grain raising when a water or acid stain was used.

I think a lot of trouble would be saved if the veneers used today were a little heavier or thicker, and then treated as I have just mentioned. We certainly would have flatter and smoother surfaces, especially on the medium priced and cheaper furniture that is being sold.

In a recent article in INDUSTRIAL FINISHING, the author explained about French polishing. That is how I learned the finishing end. I have worked on a high class piece of furniture that took weeks to finish. Every part had to be hand rubbed or polished. The only times a brush was used was on carvings and moldings. Sometimes the stain would be

mixed with the filler, but everything was sandpapered or rubbed thoroughly after each coat was put on. The rubbing was done with a pad dipped in shellac—and I question if the shellac we buy today is of the quality used then.

Finishing Materials; Production

All water and acid or water-oil stains (that I know of) raise the grain to a certain extent regardless of what care is given the work before staining, and I am sure that today there is too little sanding or rubbing between coats. Also, all woods absorb moisture, which means that the bare wood should be stained and first-coated as soon as possible . . . . and I am not forgetting that on line production there is no stopping or let-up, which often means just skipping over so as to keep up with the other fellow. There seems to be too much taken for granted—that the spray gun will take care of things.

Are our finishing materials, such as varnish and shellac, as good today as years ago? I question that very much. They tell me the varnish is still made by the same process. I also realize the mistake of allowing too long a time for drying between coats, as some varnishes have to be applied quicker than others.

In Spite of All Care, Troubles Develop

I have tried, as nearly as it is humanly possible, to do first class work and I have turned out some fine work, only to have it show checks and dish marks later. No doubt there are some reasons and causes for this trouble. It looks to me as if we have to blame the manufacturer of finishing materials for a lot of our troubles. I might add here that, judging by the written articles in INDUSTRIAL FINISHING, if the wood furniture business gave as much care and thought to bare wood and first operations as the metal or iron trade, they would have better results from the production line today. I know there are many questions and answers that can be applied to both sides. We have to admit there has been wonderful progress made in making materials, and great success has been accomplished as far as production goes.

Examples of Poor Finish

But now let us step into one of our modern homes and look at the furniture after it has been in use for some time. What do we see? Furniture check-marked all over; table tops and other tops marred by articles standing on them. There must be a reason for all these conditions.

For example, take the home I worked in recently. The furniture was of good grade; they said they paid a high price for it, which I believe. They used the furniture about three months; then had it placed in storage for six months. It was then crated and shipped to this city (Cleveland, Ohio). It is reasonable to expect some mars or scratches on goods being handled, but why all the paper and pad marks over everything? The burning-in and taking off these paper marks is something I do not worry about, because the materials I use are made especially for this work. But my trouble is, what kind of a result do I leave? Are the surfaces soft and tacky? Some jobs are good and some are

not, for the simple reason you cannot always tell just what has been put on the furniture in the first place. I have used amalgamated glazes and methaleen, and can say they are all about the same and give about the same results.

Removing Paper Marks; Rubbing; Results Unsatisfactory

In taking off paper marks, I sandpaper the surface first and then use a pad with whichever material I think is best, using it in a circular motion; then I rub straight with the grain of the wood. If I hope to build up the finish, I use shellac French varnish or patching lacquer, but might say that I use as little of this as possible.

Take, for example, the chest of drawers in mahogany. I do the necessary work, and then polish it over and wipe dry. It looks nice, but in a very short time you see streaks. In other words, the soft grain of the wood has absorbed the oil or polish. If that piece of furniture had received a good filler, then a good body on top, you would not see results like that.

Now take the dining table, also in mahogany. To the average person it looks good, but not to the experienced finisher. After starting to rub the top, a grayness shows up similar to rubbing with alcohol that has water in it, but finally it disappears by continual rubbing. About 15 minutes after finishing the table top, the lady of the house calls my attention to the top. It is d r y i n g out in streaks. I rub it again but use shellac on the pad, and then tell her that is the best that can be expected. Now any good mechanic can prove, by using the pad, w h e t h e r any top is properly rubbed flat. If I had sanded and rubbed long enough, I would have a finish as smooth as glass.

I work on furniture that has been shipped from all over the world, and under all kinds of conditions—and having all kinds of different materials to work with, I should know something about furniture.

You and I, the manufacturer and the seller, know that furniture was made to be seen and used, and not to be wrapped with paper, pads and burlap and piled up, one piece on top of the other, in a storage warehouse where the temperature is all degrees from hot to bitter cold.

Cheap Furniture; Cheap Finish

You can go into a store today and buy a 3-piece bedroom suite or an 8-piece dining room suite for as little as $69.00. Just what class of goods can you expect for that price? That's the rub. It is not what we expect but what the purchaser pays for it—and he tells you he paid enough for it. This is some of the furniture that is being wrapped with paper, pads and burlap and stored in warehouses, and then people expect their furniture to come out of the storage house looking just as good as when it went in. Do they get it? Yes, but with something added, with paper stuck all over.

Storage Firms Charged for Damage

Who has to bear the expense of taking care of all that damage? The storage and warehouse companies have to dig down and pay for all that uncalled-for expense. I am not writing of things that

have been broken in handling, but damaged surfaces. The warehouse companies have tried all kinds of paper and materials to try to eliminate that ever-present trouble.

I am writing this not only from my own experience, but for the benefit of other repairmen who are up against these problems all the time and, at the same time, not only for my employer, but for other storage companies throughout the country who have to spend thousands of dollars every year for a cause that is no fault of theirs. I think this information should be passed on to the manufacturers of finishing materials for the furniture trade, and to the manufacturers of furniture.

I use the best of materials at all times and try to keep informed about the latest methods and materials. I might say that the storage warehousemen's association used to have a standing offer of quite a large sum of money for something that would help on their packing material. They have used tar paper, wax paper, oiled paper and common newspaper. Whether this offer is still in effect I am not prepared to say. But here's something to think about. Let's hear from others on this subject.

Silver Bronze

THE TERM "silver powder" in the finishing industry does not mean silver metal pulverized to minute particles, but rather a blend of two or more shades of very fine aluminum powder and various types of gold powder. Both metals being pulverized by stamping with progressively smaller hammers ranging from 4-in. to 1-in. in diameter. The finest particles are then separated by sifting through bronze screens, silk bolting cloth, or in dusting machines wherein by vacuum the finer particles, being lighter, are caught in higher bins while the coarser or heavier particles fall in the lower containers of the machine.

Depending upon their use, the powders are then polished with various lubricants for periods of from four to 48 hours. By this method of manufacture the finest aluminum lining produced was commercially graded as all the particles passing through a 325 mesh screen. A gram of this powder would cover approximately 13,000 square centimeters (about 2015½-sq. in.). The old type of finest silver powders was then made of a blend of aluminum lining and of various golds of approximately the same mesh.

Through a new process of manufacture this powder, while not any finer in diameter of flake, has been made approximately twice as thin, or of having a covering capacity of 22,000 square centimeters per gram as against 13,000 on the old type.

In the manufacture of the new silver powders, the difficulty of mixing a heavy powder such as copper or gold with a light powder like aluminum presented many difficulties of settling out of the heavier gold or copper powders, with resultant changes in shade in both the dry and wet form when mixed with lacquer or varnish. These problems have been overcome by different polishing oils on the golds and aluminum powders, and through a new process of polishing, assuring uni-

form shades in both the powder and wet forms with a minimum of settling or color change.

The silver finishing procedure in the past has been to use from six to eight ounces of silver powder per half-gallon of lacquer thinner, to which was added one half gallon of bronzing lacquer. This gallon of lacquer ordinarily contained from 5% to 10% lacquer solids, which is the binding and adhesive qualities of the silver color. This gallon of silver lacquer covers approximately 300-sq.ft. per gallon. The new finer silver mixed and used in the identical manner will cover approximately 400-sq.ft. per gallon.

The experimental results obtained with the principal lacquer manufacturers' bronzing lacquers brought a new and very interesting theory of metallic finishing.

We note from the foregoing that a gallon of bronzing lacquer, thinned to spraying consistency, contains from 90% to 95% of thinner whose only properties are to act as the carrying agent, and which evaporate completely from the dried film. The silver powder alone gives the covering and hiding qualities.

Very careful laboratory checks made time after time and then duplicated in production runs were as follows: A gallon of bronzing lacquer at spraying consistency was divided into quarts; the new silver powders were added in amounts of 4-oz., 6-oz., and 8-oz. to the gallon and 6-oz. to the gallon of the old type powders. The covering qualities of these four quarts were as follows:

Ounces per gallon	Type of Silver Mixture	sq.ft. per gallon
4	New Type	400
6	Old Type	400
6	New Type	600
8	New Type	800

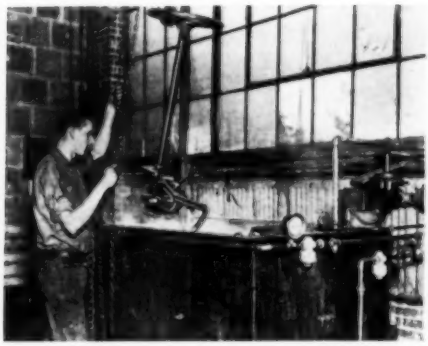
The results obtained from these tests clearly indicate an additional 100-sq.ft. of coverage per ounce of powder. It therefore follows the most economical results will be obtained by using as much of the new silver powder as your bronzing lacquer will carry. This amount can generally be determined by applying a wet coat, that when dry shows no dusting or rubbing off of the powder, when the dried film is vigorously rubbed.

Another interesting saving in the use of larger amounts of this superfine silver in the bronzing or undercoat, is that the top coat clears ordinarily go about 10% farther with a much better gloss, and the film requires less rubbing. This apparent phenomenon is caused by the finer silver making a non-porous or more impervious film, depending on the amount of metal added to the lacquer.—Leo J. Mitchell (The Mitchell-Mayer Co.).

Porcelain enamel, stainless steel and glass blocks will completely supplant conventional building materials in the new research laboratories entering construction for The American Rolling Mill Co. at Middletown, Ohio. The structure utilizes new continuous steel mill products and structural glass to achieve color, ideal working conditions and architectural distinction at minimum expense.

Heating the Solutions in

by J. B. NEALEY
American Gas Association



The gas burners are entirely enclosed so that no flame or spark can come in contact with any inflammable vapors.

HOT-SOLUTION tanks are universally employed throughout industry. Especially is this true in product cleaning, for few products will take a finish unless the dirt, grease and foreign matter acquired in manufacture are first removed. Practically every metal product factory, such as the automobile plant, is equipped with one or more hot-solution cleaning tanks. While most of these tanks are used for dipping, many are part of automatic cleaning and drying machines equipped with traveling conveyors. These machines are so designed as to speeds and capacities that they become machine tools and are synchronized with the other machines in the production line. In any case the speed and flexibility of heating are most important. Pickling tanks and plating tanks come next in order.

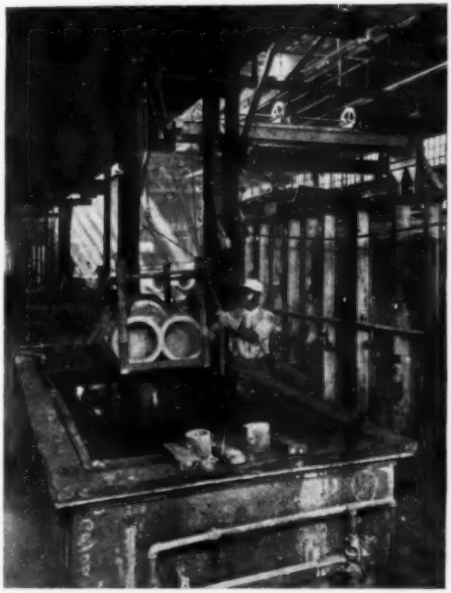
Gas immersion offers a modern, economical way of heating hot-solution tanks. It is new, ingenious, simple and efficient. Formerly steam or underfiring with gas was employed, while a few concerns used electric immersion heaters. Gas immersion heating for the tanks is cheap and rapid to operate and it is economical to install. It is a decided improvement over gas underfiring . . . . formerly the most popular method. In the first place, sediment deposition materially reduced heat transfer, and subsequent overheating would cause the tank bottom to break down rapidly. The immersion tubes or coils are spaced above the bottom so as to be unaffected by this factor. Secondly, the bottom can be insulated, as well as the sides, which reduces heat losses and fuel consumption, and makes the operation more comfortable for the operator.

Metal Cleaning Tanks . .

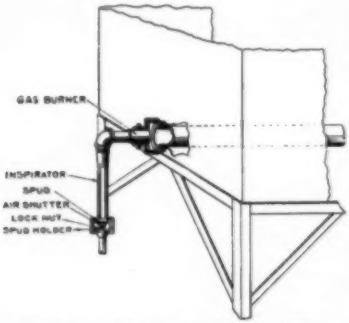
An article describing gas immersion heating as applied to metal-cleaning tanks . . . different applications . . . new, simple, efficient.

As compared with steam heat from a central power plant or heating system, higher overall efficiencies are obtained with gas immersion. Investment cost is much smaller than the installation of steam pipes, condensate returns, collecting tanks, steam traps, pressure controls, etc. Flexibility is obtained with a battery of gas immersion units, as the number in use can be quickly increased or decreased to meet fluctuating production schedules. Wood tanks can be heated with gas immersion coils, but not by underfiring. Common iron and steel pipes are satisfactory with ordinary cleaning solutions. Lead coils are used with acid tanks (pickling, electro-plating, etc.).

Immersion coils are made up of lengths of standard pipe with standard fittings. They are laid horizontally and close to the bottom of the tank, with one end welded to a hole in one side of the tank. A gas burner is clamped to the outside of the tank in such a position as to fire through this hole and into the coil. To the other end of the coil is attached an upright piece of pipe to act as a flue. Either atmospheric or pressure



Immersion heating of pickle tanks with gas burners firing into lead coils submerged in the acid bath—in lead-lined wooden tanks.

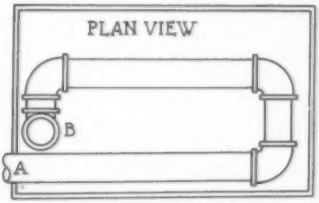


Showing position of gas burner, piping, etc., on outside of tank containing cleaning solution to be heated.

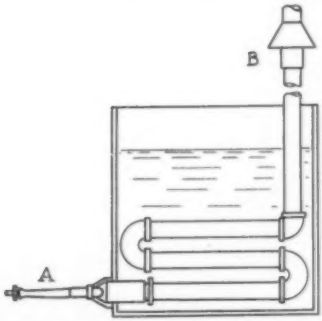
gas burners can be used.

Any existing installation can be quickly and easily converted to this method of heating. A new unit can be made up and assembled with an atmospheric type gas burner by a local welder from relatively simple plans when this is necessary. However, stock sizes of liquid heating tanks equipped with immersion gas heating tubes are available from a number of manufacturers. When cutting holes in the tank is inadvisable, a U-tube can be used with the burner firing down one leg.

Several different designs have proved successful in actual service. The tanks, for the most part, are 3x3x3-ft. Pipe sizes range well within 3 to 5-in. in diameter. Flue heights vary from 4 to 7-ft. The longer flues provide greater draft and the burning of larger volumes of gas which results in faster heating. There is considerable latitude as to design and heat input, all resulting in equal efficiencies. While increasing the heating-up speed is at the sacrifice of efficiency when operating at holding heat, this efficiency can be restored by turning down the burner.



Plan view of gas-heated coil made of standard 4-in. pipe positioned in a horizontal plane near bottom of a 30x48-in. cleaning tank. The gas burner is positioned at or near point A, while the flue is in line with the vertical section B.



Elevation view of gas-heated coil of standard 2½-in. pipe positioned in vertical plane within a 36x36x36-in. cleaning tank. Gas burner at A, flue at B.

Insulated Tanks Are Desirable

Insulation is desirable but not necessary. Uninsulated tanks operated at 150°F. lose about 180 B.t.u. of heat per hour per square foot of wall surface, by radiation and convection. The heat loss from the surface of the liquid is at about the same rate, to which must be added the evaporation loss. Tank wall losses can be reduced by 90% with 3-in. of insula-

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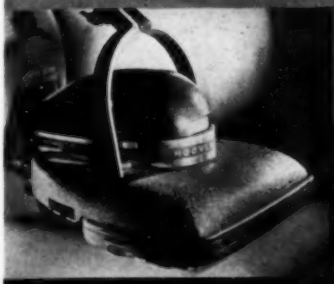

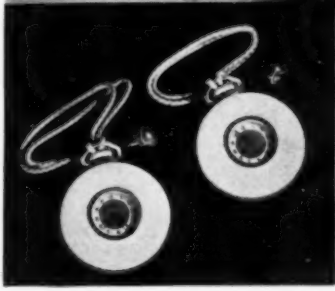

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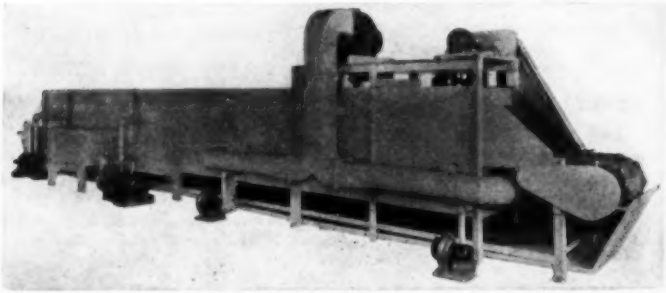
tion during the holding periods. The corresponding reduction in gas consumption would amount to approximately 35%—this with a tank 7x4x3½-ft. Rockwool, magnesia or multiple-ply asbestos is usually employed. A cover is recommended. Further economies can be obtained by using temperature controls and safety pilots.

When the cleaning process is mechanized, two or more tanks are usually incorporated. A hood covers all of the heated liquid, and pumps force the liquids, through jets or spray nozzles, against the work as it passes on the conveyor. The liquids run back into the tanks for reheating and re-use. The first tank contains the cleaning solution and the second tank contains a rinse. To this set-up is attached an enclosed sheet-metal extension, with open gas flame burners, which acts as a drying oven. These units are so designed as to length of oven and temperature as to give a perfect drying job with the fastest conveyor speed commensurate with complete cleaning and rinsing. Waste heat from the flues can be utilized to good effect here. Occasionally increased speed is effected by shortening the oven and applying gas-air torches manually to finish the drying of the work at the seams.

Immersion tube heating can be applied to pickling and plating tanks, either metal or wood, containing acid. Here lead tubes are employed. Ordinary lead waste pipe, with walls ½-in. thick and heavier, have proved satisfactory. Economical installations can be made in the case of 500 and 1000-gallon tanks, using reasonably priced automatic temperature controls with motorized valves, liquid temperature thermostats, safety pilots and gas pressure controls. This procedure renders the installation entirely automatic.

Hot Lead Pipes for Acids

One pickling installation the writer recently saw consists of a lead-lined wooden tank 5x12x3-ft. deep. Heating is accomplished with four gas burners firing into immersion coils of lead pipe 4-in. in diameter. These lead pipes ex-



Automatic and continuous unit combining washing, rinsing and drying. Immersion gas burners heat the solutions in the tanks, and premix gas burners furnish heat for the drying oven. Note the moving conveyor, and the air ducts and fan for recirculating the heat in the drying oven; also the motor-driven pumps for forcing the hot cleaning compound and hot rinse water through the spray nozzles.

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tend the entire length of the tank where they are connected with vertical sections forming stacks. The other ends of the pipes extend through the tank wall and the gas burners fire into them from the outside. Lead supports on the tank floor keep them raised 3-in. so as to insure circulation while wooden grates protect them from heavy work.

Steam, formerly employed, so diluted the 6% sulphuric acid solution and caused fluctuations in the pickling operation of such a serious nature that it was abandoned. The gas immersion method is successful and keeps the solution at 180°F. without any difficulty. The work is handled in and out by crane and hoist. Immersion gas burners are also employed to heat the water in the cleaning tank which is 5x45-ft. long, and 30-in. in depth.

Degreaser and High-Pressure Gas

The degreaser is a comparatively new development in cleaning. It utilizes the heated tank to vaporize a cleaning solution. The vapors rising and condensing on the cold work, dissolve the grease and flush the parts free of both dirt and grease. The work comes out perfectly clean and dry. The solvent employed is stable and is said to be many times more effective than gasoline, naphtha and other solvents that cannot be heated or boiled with safety. Here again the gas immersion coil offers an excellent way of heating these degreasers.

High-pressure gas burners are indicated for large installations and when greater speed and better control over combustion are desired. Any one of the conventional gas burner designs — premixing, proportional inspiration or high-pressure gas—can be used with equal advantage. Much greater gas burning capacities in tubes of given size are possible with burners in this class. Heat transfer rates as high as 15,000-B.t.u. per square foot of coil area have been reported, and, as newer types of gas-firing equipment become available, even greater rates are anticipated.

In the case of garages or other locations where explosive gases are present, gas burners are available which are totally enclosed. These are foolproof and there is absolutely no danger of flames or sparks coming in contact with the explosive gases in the room.

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V. J. Dolan & Co., Chicago, Ill., announces that a new representative, Mr. R. M. Woodall, will handle all of the Michigan and some additional eastern territory. Mr. Woodall lives in Grand Rapids and will make his headquarters there.

Spray-Finishing Classes

The DeVilbiss Co., Toledo, Ohio, announces the schedule of their training school for the first half of 1937. This school is open to industrial painters, master painters, automobile refinishers, and all others interested in learning the technique of spray-painting, and the use and care of spray-painting equipment.

The training period lasts for one week. Classes will start on April 5, May 3, and June 7. Special rates in Toledo hotels and boarding houses near the plant have been secured by the company for men attending the school.

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Modern Boat Painting

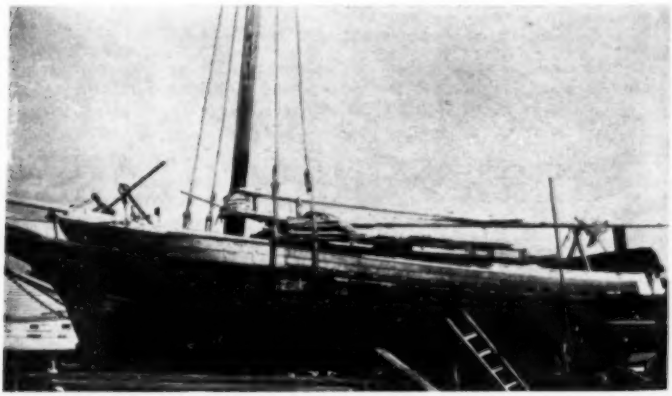
(PART I . . . WOODEN BOATS)

by George A. Endom

FOREWORD: This subject is so involved that space does not permit its presentation in full. To delve into all the intricacies of the trade would require a survey and anlysis of obsolete methods and materials comparable with present day substitutes and replacements, together with a detailed explanation of each material used, the various methods of applying them, and most important—why one material requires one method of handling on one section and an entirely different method of application on some other part of the boat.

From time to time, as occasion seems to warrant it, various phases of boat painting will be given. Meanwhile, this article offers a general outline of materials to use and methods of procedure to follow in repainting all wood boats.

If the reader will bear in mind that good judgment should dictate where to use the sturdier more durable finishes — as on barges, fishing boats, etc. — and the more decorative but slightly less serviceable finishes on yachts, speed boats, launches and smaller craft, and, by the use of that good judgment, only select from this article such information as should



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be applicable to the job in hand, I am sure the information which follows will prove interesting and helpful.

Paint Protection Is Paramount

One of the most important things for the painter to remember is that all watercraft is subjected to much greater stress and to more of the ravages of the elements than any other man-made structure. In addition to being exposed continually to rain and sleet and sun and ice, and to the scraping of floating and partly submerged debris, there is the active driving force of tons of water which can seep through the smallest crevice or rip whole planks from sides or bottoms. And there are strong chemicals—acids and alkalies—that eat into paint coats and, having damaged the paint, they attack the exposed surfaces of the structure itself.

There are always unknown numbers of different species of boring and clinging marine life and growth ready to aid in the destructive work of the elements. Because of these combined destroying agencies, it is of primary importance that the finish (paint, varnish or other coating) must first protect and preserve; then be decorative.

To fully protect any given surface it is necessary to not only paint and varnish the exposed areas but also the inside surfaces and hidden corners; the edges and ends of all planks and wood parts must be sealed against moisture and salt air. For this reason, if a thorough repainting job is to be done, be sure that enough of the proper materials are purchased to cover amply the surfaces that are not exposed to view as well as those easily visible.

Condition of Surface Is Important

Before purchasing materials necessary to accomplish the work, it is advisable for the owner or painter to carefully examine each section and part to be painted, so that the surfaces may be properly prepared to receive the preservative and decorative finish.

Depending upon how old the boat is and how much time has elapsed since its previous painting; also, as to what the boat has been subjected to in the way of wear and tear in service, depends the amount of work that must be done before applying any of the paint.

Start from the inside bottom and work upward and outward, leaving all of the finer finishing, such as cabin interiors, wheels, decks, rails and outside decorative white until the last. Clean the inside bottom and the bilges thoroughly. Examine the boat for signs of wood deterioration or failure. Using oakum or plastic marine sealer, fill all crevices, especially around bows or tie or socket plates. This is to prevent moisture in the form of condensation or wash from molding and rotting the wood.

After the complete section has been cleaned and prepared for paint, apply the initial coat. If this surface has been properly painted, as it required during the life of the boat, one even heavy coat of paint should be sufficient. If the surface has been neglected or painted indifferently on previous occasions it is better to apply two coats, having the first coat somewhat thinner than the second.

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Regarding the type of material to apply, this is dependent upon: 1) what materials had been previously used; 2) how much money is being expended for the work, and 3) what service the boat must render, and its special type. For motor boats, launches, yachts and other pleasure craft, a good grade of non-fouling enamel or a hard spar varnish (clear or pigmented) will be adequate for these insides. For the heavier service schooners, sloops and fishing boats, a non-fouling heavy-bodied paint is generally used.

It is assumed that the wood has long since been protected by certain penetration of the original painting, and that therefore it is only necessary to seal and protect the surface against moisture and foul atmosphere. There is another type of paint admirably suited for this class of work, but as it is also suitable for use on metals it will be explained further on.

Having completed the inside repainting of the boat, which included the underside of the decks but not the cabin or galley finish, the next operation begins on the outside of the boat.

Cleaning and Repainting the Bottom

The outside bottom is cleaned of all marine growth and slime. Sometimes this can be accomplished by means of stiff brushes, but often it is necessary to have the bottom scraped. When this latter operation is in order, care must be exercised so that when the barnacles (they stick like glue, by suction) are removed, no serious damage will be done to the boat bottom, especially to copper rivets or plates or to seam edges of planking. For this reason it is best that someone experienced in this work, and equipped with the proper tools, be delegated to this operation, although it can be done by anyone willing to undertake a tedious and exacting job. When the bottom has been thoroughly cleaned and renovated (a plank may need replacement or a patch may have to be put on) the bottom is ready for coating.

Repaint the Bottom First or Last?

When to repaint the outside bottom of the boat depends upon one or more of several important factors. Whether this be done first or last depends upon: 1) the facilities available and the size of the boat; 2) the type of boat bottom paint used, and 3) how soon the boat must be returned to the water.

Remember that when a boat is constructed of wood and is left out of the water for any length of time, the fibers of the wood contract, causing the seams to open and causing some leakage when submerged again, until the fibers become swollen from moisture. For this reason it would be advisable to leave the painting of the bottom until last. Also, there are one or two brands of copper bottom paint on the market which do not function as they are intended to unless they are submerged while still wet, as the oxygen in the air creates a different chemical compound in the paint and this combination reacts adversely on the preservative qualities of the paint.

So the thought would be to quickly coat the boat bottom and immediately launch the boat. This

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is ideal when this can be accomplished, but it cannot always be done. And there is the added hazard of removing the protective coating by abrasion by scraping on the ways.

Another angle is that dry-dock and boat-yard rental is expensive, therefore it is better to coat the bottom and relaunch the boat as quickly as possibly. Many times all operations jibe and this is possible, but more often some delay holds the boat over another day.

One of the best solutions to this problem has been found in a new copper bottom paint that can be applied as soon as the bottom is ready. If this paint is applied freely over all of the area of the bottom to a point approximately 6-in. above the high water mark, it can be allowed to dry; and when the boat is relaunched the vehicle in this paint will act as a perfect sealer in the seams and joints of the planking while the wood is swelling back into place. On the other hand, it may be submerged while wet also and abrasion or scraping will not entirely remove its protective film. This paint gives the owner the option of either method as different conditions may require. This bottom paint is anti-fouling and is poisonous to all kinds of marine pests. Therefore the time to paint the bottom is controlled by the selection of the paint and the attendent conditions.

The Outside—Above the Waterline

The outside of the boat above the waterline is next in order. To protect and beautify this, proper care should be taken to fill all holes and crevices—not with paste wood filler or putty, but with a plastic or composition filler made for this purpose. Plastic wood is satisfactory in most cases. Paint shale and loose particles should be removed and then it is generally better to apply two coats of paint, especially if it is a pleasure craft or is to be finished in white. Use a marine flat white followed by a gloss paint or a coat of good grade spar varnish. Some types of materials that have been found excellent for this purpose will be enumerated further on.

The sides of the cabin or wheelhouse are included in this phase of the painting, and the interior of the latter is finished at this time. The deck, railings, hatch covers and all interiors are next in order. It is important that all corrosion on metal work—especially where it is adjacent to or is set into the woodwork—is thoroughly cleaned and primed (and the primer allowed to dry) before the entire surface is painted. This applies especially to decks, around hatches and at railing angles and stanchions. The reason for this is obvious. If this is not done the wood will rot from water seepage and penetration.

Patching Canvas Covers

Where canvas-covered decks and hatch covers have become damaged and water has seeped underneath, cut away such portions as have become mil-dewed or have become loose before attempting repairs. Sometimes it is necessary to remove the old canvas entirely; sometimes only a patch is required. Before replacing the old or the new canvas, or even laying a patch, coat the surface of the deck with a fairly thick coat of marine glue.

If this is too expensive, use heavy paint. Allow either coating to become "tacky"; then roll the canvas into place, using a roller as an iron. Allow to dry 48 hours before applying the exterior coats of paint.

Inspection After Finish

When your work is entirely finished, before you discard or put away your paints and brushes, go over all of the inaccessible places and those that were hard to get at, with a light, a mirror and some paint. Behind brackets and angles; behind bows and in corners, you will find many places that have not been painted. Some of these you will see and only be able to reach by rigging or tying your brush in some manner at right angles to a stick or piece of pipe. Doing this conscientiously will return dividends in the form of protection, for it is in these out-of-the-way places that deterioration usually begins. After all, you have spent a great deal of time and money painting the boat, so the slight extra effort will be well worth the trouble it takes.

Some Comment on Materials

For personal reasons the writer has had occasion to investigate thoroughly the various good and bad features of many kinds of protective coatings. First by casual search, then by slightly more intensive research, much of the field of varnishes, enamels, dopes and lacquers, and finally synthetics, have been tried under many conditions and upon many kinds of surfaces.

The long-oil spar varnishes, properly aged and applied under favorable temperature conditions, still seem to lead the field as protective finishes for wood. But in this class of spars the cost per gallon seems prohibitive; indeed, some of the better ingredients they contain can hardly be obtained at any cost. It is therefore necessary to select second best, which is a synthetic varnish manufactured by many concerns. This material is fairly high in cost as compared with the cheaper spars, but its wearing and protective qualities justify the difference. Along the same lines several glyceryl phthalate enamels are outstanding.

Bituminous-base solutions are ideal protective coatings but have always been brittle. Recently a manufacturer developed a method of adding several oils that make some of these bases decidedly flexible and tough. The addition of pure copper increases its corrosion inhibitive qualities and makes it an excellent preservative paint.

Red lead and linseed oil, separately and together, are still in great favor as rust inhibitive and protective agents, but I have seen one instance where a patent lead chromate primer protected better than red lead only.

For the protection of new wood on boats it is not advisable to use any wood filler, either liquid or paste. Rather use a half-and-half mixture of raw linseed oil and spar varnish or, if this does not fit into the production schedule (due to its slow drying time) use spar varnish reduced with turpentine as a wood surfacer. The build-up from this will be sufficient to give ample protection.

Never use any metal primer or surfacer on wood. Poor adhesion of the finish coats will result, particularly around salt water. In the

use of shellac it is advisable to proceed with caution. Orange shellac varnish is better to use than that which has been bleached.

Paint Only on a Clean Dry Surface

If you are painting the boat out in the open, never apply any coat—varnish, enamel or paint—until the weather is right. In the fall and winter months, this is after the sun is high on a clear day. In the summer or in hot climates, paint the surface only after the sun has left it for a couple of hours or where it will not receive the sun's rays until it is fairly dry. If it is borne in mind that new wood contains a certain amount of moisture that must have a chance to evaporate before paint is applied, and that if this is not done the sun's rays will draw all of the moisture through the paint film, causing blistering, poor adhesion and other failures—then you will realize what is meant by the caution, "Paint on a dry clean surface," and take steps to prevent this most common fault from appearing in your work.

An article about painting the metal surfaces of watercraft and the surfaces of all-metal boats will appear in a later issue.

New Enamel Produces Chemical Metal Colorings

The colors produced on metals by the anodic process and other chemical coloring methods can now be economically produced by a new line of enamels developed by Maas and Waldstein Co., Newark, N. J., according to a statement by that company.

This new type of enamel, known as "Platelustre," is semi-transparent and, when mixed with clear lacquers gives a clear, brilliant, transparent colored effect that is said to be fast to light and very durable. Platelustre is supplied in a large assortment of colors, permitting the reproduction of all popular chemical metal-coloring effects, as well as making possible new effects, without the use of chemical processes.

Metal of all kinds can be finished with Platelustre. It is especially suitable for compacts, lighting fixtures, novelties, casket hardware, and other products where a brilliant colored metallic finish is desired.

Standard Varnish Vice-President

Mr. E. E. Day, vice-president of the Standard Varnish Works of Illinois, has been elected a vice-president and member of the Board of Directors of the Standard Varnish Works of New York.

Revolite Acquired by Atlas Powder Co.

The Atlas Powder Co. announces the acquisition of "Revolite," formerly manufactured by the Revolite Corp., a subsidiary of Johnson & Johnson, New Brunswick, N. J.

The manufacture of "Revolite" will be moved to Stamford, Conn., where the business will be conducted by the Zapon Division, Atlas Powder Co. Mr. M. J. Creighton, General Manager of the Zapon Division, will direct the new enterprise.

"Revolite" is the registered trade name of a fabric coated with a flexible Bakelite resinoid. It presents remarkable qualities of beauty and utility, and is made in a wide variety of metallic finishes and striking colors. "Revolite" is well-known in the interior decoration and upholstery fields. The extreme durability and permanence of this Bakelite resin-oil-coated material makes it applicable to many industrial uses where its high resistance to heat, alcohol, soaps, oils and chemicals provides properties not obtainable in the older types of coated fabrics.

"Revolite" fits in with the long-established line of Zapon pyroxylin and rubber-coated fabrics, to broaden and extend the activities of the company. Atlas will continue research and development in order to augment and improve the possibilities of this versatile material.

Atlas is taking over Revolite personnel in both sales and manufacture.

SOME STANLEY LEADERS

1617

The Ace of Clear Metal Coatings. The Original Non-spotting Lacquer.

8994

The Aristocrat of Clear DIPPING Lacquers.

62C-278

Dull Black Lacquer (which has proven so satisfactory on metal radio tubes).

52B-152

Clear Lacquer for Protecting Bright Zinc and Cadmium.

52C-390

Clear Perspiration Resistant Lacquer.

Stanley Metallic Lacquers

In 26 Standard Shades.

●

We welcome the opportunity of telling you more about any of these materials.

THE STANLEY CHEMICAL CO.

EAST BERLIN, CONN.

LACQUERS - SYNTHETICS - ENAMELS - JAPANS

A Subsidiary of THE STANLEY WORKS, NEW BRITAIN, CONN.

Review of Equipment

(CONTINUED FROM FEBRUARY)

Editor's Note: The items of new equipment included in this article were carried over from February issue . . . . partly because of lack of room for them in that issue but principally because several of them came in too late to be included in the February number.

Details of new nozzles and atomized heads.

Fluid Nozzles and Atomizer Heads—According to the manufacturer, the fluid nozzle is an improved design and incorporates features which make it more efficient and economical for spraying various materials. It is made of a special grade of wear-resisting steel, with long tapered seat accurately machined and burnished for perfect alignment with atomizer head. Generous air passages, closely spaced, provide a large annular air supply to the atomizer head, resulting in a perfectly atomized spray. The internal tapered seat is finished to exacting specifications, allowing the paint needle point to seat accurately and prevent dripping or spattering. One particular feature is that the nozzle seats on the base of the thread of the head which keeps paint or other material entirely out of the threads, eliminating any clogging. . . .

The bronze atomizer head is of simple one-piece design with straight air passages, eliminating friction and rendering it easy to clean. Perfect alignment of seats is assured. Ample air requirements are provided by large non-frictional air passages and expansion chambers which increase the velocity and volume and produce fine atomization at lower pressures. Manufactured for siphon or force feed, and in sizes and styles to handle any type of material.

Air-Driven Portable Sander—A new and improved air-driven model by a company that manufactures and sells both electrically-driven and air-driven portable sanding, rubbing and polishing machines. The model illustrated in service in the accom-

The BEAUTY of the human figure is often

captured by camera lense and brush . . . but never do they create the beautiful reproduction. Genuine artists endowed with vision and genius are the real creators. Artists who know the values of composition, tones, colors, highlights and shadows . . . the worth of balance, composure, poise.

Creating a masterpiece in a commercial product likewise requires the vision and genius of the talented artist. One who knows the values of styling, proportions, colors, harmony and contrast . . . plus the practical requirements of commercial production.

Our creative studio is staffed with artist and industrial stylist . . . for the purpose of stimulating the sales-appeal of commercial products by applying appropriate finishes.

Write for details of this service.

Rockford Varnish Co.

ROCKFORD, ILLINOIS

Kindly mention INDUSTRIAL FINISHING when writing advertisers

panying pictures has been developed through constant experimental work and practical application in hundreds of plants covering over 40 different industries where from one to over 150 portable sanders of this make are in use. The weight of the new model has been reduced from 7½-lbs. to 5½-lbs. This weight reduction and perfected balance, plus the compact dimensions of 7-in. long, 4¾-in. high and 3¾-in. wide, provide

Smoothing up the cast-iron frames of machine tools.

a comfortable "fit" to the palm of the hand and make the machine extremely responsive to the guidance of the operator.

The air motor is of patented design, built to the closest tolerances practiced in the machine tool industry. Specifications as to quality of material and workmanship, insure continuous trouble-free service and complete interchangeability of replacement parts required for service, with a minimum of maintenance and low operating cost. The machine operates efficiently on 45 to 60-lbs. of air pressure, using approximately 6-cu.ft. per minute under load.

For wet work a water connection is provided for attaching water hose (with an outlet on either side of the

Using the portable sander for smoothing the bodies of trailers.

machine) that directs a spray of water to the surface being sanded. Redesign of the water outlet protects the workman from getting wet, without the use of baffle plates. For work with naphtha, benzine, etc., a special block with Sterline base is provided, which is impervious to volatile compounds.

The principle of "floating," as applied to construction of the block and pad, is an exclusive feature, providing flexibility for sanding and rubbing of curved and flat surfaces. Special pads, varying in flexibility, have been developed for particular types of surfaces and materials. The sanding action is reciprocal, with ⅝-in. travel of the pad, at speeds of from 1750 to 5000 complete oscillations per minute, dependent upon the application. This movement duplicates the natural back and forth action of hand sanding.

Sandblast Equipment—A manufacturer of sandblast machines and accessories writes: "We believe that our sandblast machine will be interesting to industrial finishers. While this machine has been on the market for some time, it has never been brought to the attention of the trade

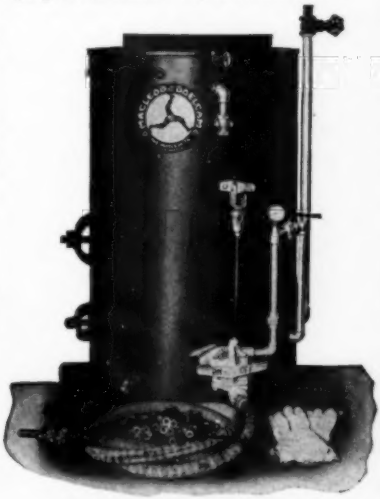
you mention. We have just recently developed a valve that will no doubt be adaptable on any sandblast machine. This valve works by pinching the hose shut, and it will not wear out. It is so new that we do not even have a photograph."

Pressure-Feed Spray Cup—Designed for pressure-feed spray gun operations which require only small quantities of material; excellent for laboratory use in the duplication of pressure-feed production results. The cup is used with all types of materials of such body that they are not suitable for suction-feed application. Modern decorative effects and finishes such as stipples, spatters, blends, plastics and the like are produced by means of the pressure-feed cup in combination with the decorators' and plastic spray heads.

Fluid-pressure regulator and gauge, air-pressure adjusting valve, and a combination release and safety valve are all mounted on the cup lip. The arrangement of these regulators is such that the operator finds it convenient and easy to constantly maintain a fine degree of control. Volume of material flow to the spray gun is controlled by the air pressure in the cup. This can be regulated to the flow desired. Atomizing air pressure is controlled by the air-pressure adjusting valve. A combination release and safety valve releases any excess pressure from the cup.

Pressure-feed quart cup attached to spray gun, supplied with or without gauge.

Sandblast Machine—A direct-pressure machine with sand-flow control instantly adjustable from the finest to the coarsest stream without stopping the machine. Some features include inclined bottom, removable screen tray, individual air and sand controls on side for accessibility, large filling valve, improved moisture-and-oil separator, separate blow-off valve .... Used extensively in lettering and carving marble, granite, glass and wood.



Has several new features.

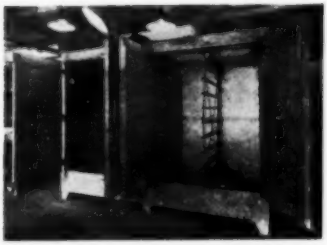
Ovens for Bake-Finishing — A new line of industrial ovens of various

sizes and types is announced by a leading manufacturer whose letter (with the accompanying illustration of an electrically-heated oven) explains that:

"These ovens or dryers can also be supplied for oil, gas or propane, direct or indirect-fired arrangement, all under full automatic temperature and safety control. The direct method of operation allows for contact of the products of combustion with the work; the indirect type, circulates clean pure heated air in the quantities and velocities desired."

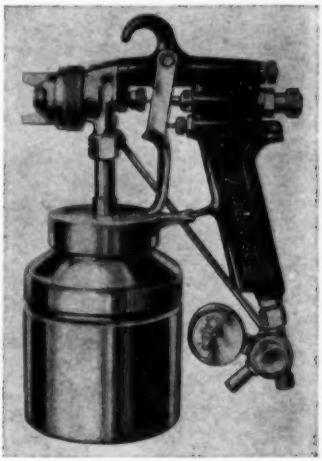
According to the company's bulletin:

Gas-fired units are equipped with P. D. M. Venturi type atmospheric burners. If necessary to prevent the entrance of volatile fumes through the burner shutter, the unit can be built with a guarded pilot and equipped with a burner receiving air by pressure. Safety controls can be furnished for shutting off the fuel supply in the event of failure of the



pilot, failure of proper air circulation, or failure of the thermostatic control to hold temperature within desired maximum limit. Capacities range from 250,000 BTU. to 1,000,000 BTU. per hour.

Pressure Cup Spray Gun—A pressure-cup assembly with regulator and gauge which attaches directly to standard spray guns. The new assembly is recommended for all types of materials which are of such



Attaches to any standard "Thor" gun.

consistency that they cannot be sprayed successfully with a syphon-feed cup. It is also ideal to duplicate pressure-feed conditions in laboratory testing, or for production painting requiring pressure conditions with small quantities of materials.

A specially cast cover fits snugly over the handle finger-rest, assuring a firm fitting cup. Regulator and gauge are well away from the danger of clogging with paint, even when the cup is tipped at right angles. The outfit is equipped with air-adjusting valve, release and safety valve, and air-pressure regulator to control pressure on cup; easily attached and detached; quart cup.

Rollacoat Slat Finisher—Coats bottom, top and two edges of Venetian blind slats at the same time. Adjustable to take different width slats and to apply any thickness coat desired. Rolls are located on overhanging shafts, thereby permitting working parts to be completely shielded from paint; also permitting

The Potent Charm of
Marble and Wood Grain
Reproductions

...it's a merchandising idea that builds sales

TAKE metal in the raw; wood in the white; glass, composition board, etc...finish the surface by the OXVAR Process of reproduction and you have a product of beauty, dignity and sales appeal.

Hundreds of items seen at the shows, on display and in practical use, owe their popularity to this modern process of surface finish, portraying all the depth, tone, beauty and changeability of original wood grain or marble. Manufacturers everywhere are taking advantage of the opportunity to develop and use distinctive and exclusive designs with the aid of OXVAR Reproductions.

Our Art, Color and Design Department is ready at all times to assist you or your color design engineers in adapting this process to your production. We maintain an engineering staff, and complete service for installing the process.

OXFORD VARNISH CORPORATION
Detroit, Mich.

Processes patented in the United States and foreign countries

easy removal of rolls for cleaning. Paint is fed to rolls by gravity from a 5-gallon container.

This machine is available in either hand feed or automatic feed. In the latter type, a side pusher plate extends the entire length of machine table. Slats are moved out sideways onto conveyor belt which carries them into painting rollers. Power is supplied by an explosion-proof motor. Speed reducer is full ball-bearing. There are four composition rolls and two steel rolls, each roll being 5-in. in diameter and 4-in. wide.

S-B Spray Outfit—A new "low-cost efficient spray outfit which includes a small air compressor, a spray gun and the necessary hose and nozzle connections." According to the manufacturer's letter, "the new spray gun shown here combines both internal and external atomizing nozzles, a feature which makes it available for all the various jobs it is called upon to do in industrial plants.

"Low pressure internal atomizing is an economical system for applying most liquids because such nozzles give great coverage per cubic foot of air used. On the other hand, some materials like the new fast-drying lacquers, must be atomized after they leave the gun. This gun can be quickly changed to handle such materials . . . . an all-purpose spray at a minimum investment."

Spray gun with cup container.

Lift Skid—Makes easy the task of lifting and moving filled and partially filled drums or barrels of liquid materials used in finishing rooms; enables one man to handle a filled drum weighing as much as 1000-lbs.

Makes heavy drums easy to handle.

Important Correction—A letter from the manufacturer of the G. M. spray gun, briefly described and illustrated in the "Review of Improved Finishing Equipment", February issue, page 54, advises us that: "We want to correct an important error . . . Instead of 'gives off no spray mist' as you stated, it eliminates 25% spray mist.

"Due to our special internal mixed head, it enables us to give double breakage and eliminate 25% spray mist, therefore we have a saving of material."

Bakelite Adds to Sales Staff

The Bakelite Corporation announces the appointment of Charles M. Rice to its eastern sales staff, covering Bakelite resins for paints, varnishes and enamels. Mr. Rice was formerly associated in a sales capacity with the Stanley Chemical Works and the Arco Co.

SHOP-PROOF

A NEW FLAT LACQUER CABINET FINISH

1. Will not mar in factory production or every-day use.

2. Can be rubbed to a high glossy surface.

THE ARCO COMPANY
CLEVELAND, OHIO
Please send FREE Sample to:
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Automobile Finishing—I

CLEANING STEEL BODIES ON THE PRODUCTION LINE

by Francis French

This article carries through the cleaning operation; and succeeding ones (if you want them) will cover the priming, glazing, finishing (both lacquer and synthetic enamel) polishing, etc. In preparing this article I have had the cooperation of the foreman of the paint line in one of the West Coast assembly plants during 1936 production, therefore it is based on actual practice.

There could have been more detail and reasons and discussion added to this article on cleaning, but I felt that too much technicality would detract from the interest rather than enhance it.—The Author.

●

IN ANY GOOD PAINT job, cleanliness of the bare surface to which the primer, sealer, filler or undercoat is to be applied, is of major importance. This is particularly so in modern automobile finishes. A substantial structure can't be built on a faulty foundation without eventually causing serious trouble; and in automobile finishing the cleaning operation is the foundation of all succeeding coats. It must be carefully watched and thoroughly done.

The proud possessor of a new automobile looks at the beautiful lustrous finish on his car, but has no idea of the production department's worries and troubles and "do-overs" caused by faulty cleaning of the metal surfaces. Occasionally the owner does get a new paint job free; the factory stands the expense because the man on the cleaning or supervising end couldn't be everywhere at once, and something slipped by.

A modern automobile production flow sheet for finishing can be divided into several heads of which the most important is cleaning, and this is what I will discuss in this article. Cleaning is the paint superintendent's "baby," and if he doesn't mother it (and father it too for that matter) with an ever watchful eye, it is sure to turn out bad.

Automobile bodies come through from the metal department where they have been fabricated, doors hung, dings removed, filing completed, and the metal soldered and smoothed up

ready for cleaning. From the metal line bodies come to the paint department covered with grease, drawing compound, soldering acid and flux, neutralizing agents (often sodium bicarbonate) and rust. Particularly is the rusting condition aggravated by damp weather over week ends. Some rusting also occurs from the touch-up soldering operations which usually are done hurriedly and then not properly neutralized.

Pre-cleaning Operation to Remove Grease

Before applying the wet process metal cleaner, a pre-cleaning operation is advisable, using mineral spirits to remove excess drawing compound and grease. Also, bodies come from the metal line occasionally with paint or white lead adhering to their surfaces. This should be removed with paint remover, before applying the cleaning agent.

While the cleaning material contains a grease remover, and might work satisfactory, yet this added preliminary operation is advisable because the water of dilution in the wet process cuts down somewhat the efficiency of the cleaning agent. The natural question is, why the water of dilution? The answer is that most of these commercial cleaners contain phosphoric acid which requires water for satisfactory operation. There is something to be said for a dry cleaning operation, but since the plant I am discussing uses the wet process, I will refrain from taking up that phase of the cleaning problem in this article.

In this plant they strive to maintain a production of six cars per hour. The details of cleaning are as follows:

Application of Metal Cleaner

Cleaning operations begin on a line approximately 250-ft. long, including an oven capable of holding 15 bodies when the line is full. Bodies come through on metal trucks fitted with ball-bearing casters, and continue through the different departments from one line to another, being pushed and turned by hand at the turns.

Group No. 1 consists of two men. One brushes on the liquid metal cleaner, thoroughly covering the body inside and out. The other washes off the metal cleaner, using a hollow sieve-like circular fiber brush attached to a hose to scrub and flush out all cleaner from inside and out in cracks, recesses, door jambs, etc.

In the present all-steel bodies it is particularly important that rust formed inside must be neutralized and flushed out, as well as the more conspicuous outside where the finish is to be applied. Rust, neglected and left inside, will eventually eat through, spoiling an otherwise perfect job. The same careful procedure is necessary in removing grease from the inside, as cases have happened where grease from a carelessly cleaned inside, loosened and thinned under the heat of the oven, ran down the side of the body and necessitated a refinishing.

Supervision Important

It is particularly important that the supervisor watch Group No. 1, to see that a thorough application of cleaner is made, as this cleaner not only removes grease, rust, etc., but etches the metal,

giving a tooth or bond for the first coat of paint. Any missed spots are caught later, on the line, but the proper place to do this job thoroughly is at the beginning, therefore a careful supervision of this operation is quite important.

As this work is on a base rate, with an additional piece work rate added, speed sometimes leads to carelessness, hence an eagle-eyed supervisor plays an important part in the beautiful finish of your car.

After flushing off the cleaner, the bodies are "blown off" with air or steam which removes water from the recesses, joints, door jambs, etc., and minimizes the possibility of rerusting. At this point the chemically clean body enters the oven which is heated to a temperature of 220°F. In 30 minutes it emerges at the delivery end ready for the next operation.

Spraying Sound Deadener Inside the Body

Here we see one man (Group No. 2) with a spray gun of large orifice, and a pressure tank of "anti-rumble" (sound-deadening) compound. When the body has cooled to room temperature it is lifted off the truck by hooks and the bottom of the floor is sprayed. Lowering it again, "anti-rumble" compound is sprayed over the inside of the tonneau, panels, top and doors. Templates are used in all openings and care is taken to prevent any compound from getting to the outside of the body. Should any accidentally get on the outside, it is promptly removed with a quick wipe of a rag wet in mineral spirits. Templates are then removed and the operation is repeated on the next job.

Light Sanding and Wire Brushing Inside the Body

From here the third group takes over the work. This group consists of two men who go over the outside surfaces of bodies with a light sanding and wire brushing—sometimes called a clean-up operation. They remove any light film of rust or residue from the bodies, clean the reveals and around the instrument panels, behind door hinges, in the lock recesses and all other places where particles of foreign matter might lodge. For this clean-up operation a short-handled 3-strand wire brush is used. The sanding medium is No. 180 dry emery paper.

At this point the entire body is carefully checked for misses or slips in the cleaning operations. If any are found, these places are carefully cleaned with mineral spirits, followed by hand sanding and wire brushing. While not imperative, it is advisable to blow off all dust and sand caused by the sanding and wire brushing clean-up job, so as not to carry it over to the alcohol-wipe operation.

Alcohol Wipe Operation

The fourth and last "group" in the cleaning schedule is composed of one man who gives the jobs an alcohol wipe. The material used should be composed of approximately 90 parts ethyl alcohol, five parts aviation gasoline, three parts methyl alcohol and two parts water.

This alcohol-wipe will remove hand marks, residual phosphoric acid and any dust still remaining after blowing off. The operator wears rubber gloves, applies the alcohol with a wet rag, and im-

for the foundation of the finish—use

METALIZED PRIMER-SURFACER No. 4776A

Primes and Surfaces in one operation on

WOOD—METAL—COMPOSITIONS

Covers—Fills—Dries Fast. Sands in Ten Minutes.
Topcoat immediately after Sanding.

Natural woods, rough or smooth metals and porous compositions are primed, filled and sanded quickly and easily with Metalized Primer Surfacer No. 4776A.

Metalized Primer - Surfacer No. 4776A has perfect adhesion and flexibility on cold rolled steel and non-ferrous metals after they are properly cleaned.

Metalized Primer - Surfacer No. 4776A offers distinct economies in coverage, hiding and filling properties and mileage because of the leafing action of metallic ingredients.

Metalized Primer - Surfacer No. 4776A can be sanded easily and quickly ten minutes after application—no clogging of sandpaper. Sanding is not necessary on smooth metals.

Metalized Primer - Surfacer No. 4776A is a perfect base for oil enamels, lacquer enamels or synthetics. It can also be used in conjunction with baking enamels.

This product is not experimental. Thousands of gallons have been used over a period of years with uniformly perfect results.

Write for a working sample

UNITED LACQUER M'F'G CORP.

Manufacturers of

LACQUERS—ENAMELS—THINNERS

General Offices & Factory

LINDEN, NEW JERSEY

mediately wipes it off with a dry one, changing rags every second job or oftener if necessary. After this final cleaning, bare hands should not touch the metal, as the acid in the perspiration is rust-forming and can cause paint failures. Next, the job is put on the line leading to the priming booth.

A time study on the foregoing cleaning schedule shows 48 jobs per day of eight hours for six men, or one man-hour per job. In following articles I will discuss undercoats, finish coats, striping and polishing, as well as attempt to answer readers' questions if any, and if able.

Heatproof Aluminum Ready Mixed

The Excelsior Varnish Co., 1238 W. 74th St., Cleveland, Ohio, announces "Excelbrite", a ready-mixed aluminum paint which, it is claimed, differs from ordinary aluminum in that it always gives a smooth bright finish, even after long standing, and does not deteriorate or give a rough dull finish. It produces an extra bright, extra smooth silvery finish, and is suitable for brushing, spraying or dipping . . . . is highly heatproof and waterproof.

Crawford Oven Co. Becomes Part of American M. & F. Co.

On January 1st, 1937, The Crawford Oven Co. became The Crawford Oven Division of The American Machine and Foundry Co. of New York City, operating plants and offices in various cities in the United States.

The personnel of The Crawford Oven Co. will continue to operate the Crawford Oven Division of the parent company, and will continue to service all existing installations. The plant, service and sales departments remain in New Haven, Conn., at 200 Shelton Ave.

The new arrangement and the enlarged organization offers the very latest designs of ovens backed by 33 years of experience in installations of all types.

Alsop Occupies New Plant

Right in the hub of the Connecticut manufacturing area, where the main Hartford to New Haven and Waterbury to Meriden highways cross at Milldale, The Alsop Engineering Corporation is now settled in its own new home purchased last fall—a 10½ acre property with buildings containing over 60,000-sq. ft. of floor space on one level.

The general offices are located at the factory. The New York Office and showroom is still maintained with a service department for the whole metropolitan area at 17 W. 60th St., New York, N. Y.

Airless Painting Machine

An illustrated folder, descriptive of the new and improved Model "N-1" Norris Airless Painting Machine "representing a revolutionary development in mechanical painting," has been prepared for distribution by the Electrical Painting Equipment Co., Inc., 247 Park Ave., New York, N. Y.

Model "N-1" is an airless, centrifugally-operated machine, eliminating paint fog . . . .

With this machine, practically all kinds of long and short oil paints and enamels may be used, a stripe varying in width from ½ to 18-in. can be painted, and the flow and density of the coating regulated by means of a paint control device. At the option of the operator the cut-off on each of the four sides may be held to a practically sharp line, making it possible to paint up to moldings and trim, or the edge may be feathered in order to avoid any overlaps. On the average job it covers a large surface four times faster than a brush.

Special types of work, handled easily by this machine, include perfect stenciling. It lends itself to a variety of industrial uses, such as barrel painting or striping and many other mechanical operations where an absolutely even deposit of material is required. . . . Little practice is required in order to operate this machine efficiently.

Folder Shows Baking Ovens

A new 4-page folder, published by The Gehnrich Corp., Skillman Ave. & 35th St., Long Island City, N. Y., illustrates a large number of industrial oven installations and gives information relating to the merits of this company's ovens and auxiliary equipment.

SURFACERS

PORES NEED FILLING for smooth - textured attractive finishes. Presdwood, celotex, natural woods, rough metals and porous compositions need quick-drying, easy-sanding, high-bodied surfacers—in short, our CEL-U-LAK Surfacers.

These have unusually high body, coupled with low viscosity, permitting a heavy application by spray; air dry to sand in 1½ hours, force dry at 125° for 20 minutes. They are ground finely and have phenomenal adhesion and resistance to moisture.

CEL - U - LAK Surfacers are standard in white, ivory, dark grey and red. They have for 6 years been an outstanding successful item in our line. We suggest you examine it for your requirements.

The
VARNISH PRODUCTS CO.
CLEVELAND, OHIO

DON'T FORGET THAT GOOD RESOLUTION FOR 1937

— to use only the best materials available on the market, to keep in pace with your successful competitors in the finishing industry who are doing likewise.

COTTON
WOOL
Dyed or Natural

RAYON
Dyed or Natural

Cut to uniform length for Spray Finishes of Outstanding Beauty

Claremont Waste Mfg. Co.
CLAREMONT, N. H.
The country's leading makers

Unnecessary Failures

...IN THE FINISH

by Greggs Phillips

• Here are some typical case histories of finish failures—what they looked like, and what was blamed, what really caused them and what the final remedies were.

DELAYED in getting out an important order because the finish suddenly reacts in a peculiar manner, the entire personnel from finishing department foreman up to the general manager unite in condemning the finish they have used for years. It has taken 24 hours for salesman "Jim Smiles" to arrive on the scene. He is put on the spot, but because of his long standing friendship, he is taken to the finishing room to solve the trouble.

Such a situation is not rare. Undoubtedly many readers can put themselves in the position of any one of the individuals mentioned. The crux of the situation is that the finish has suddenly gone wrong, when apparently applied in the same manner and under the same conditions as have existed for years. The immediate conclusion is to condemn the finish. It is typical of a situation which, when carefully analyzed, could have been avoided in many instances at any rate.

The X Mfg. Co. had been using "Shine-Glo No. 12" black lacquer for eight years with good results, as a one-coat spray finish on small metal boxes. Pinholes developed. A few months before, they had changed over to another source of thinner but a return to the original thinner showed no improvement. In fact the pinholing became more severe.

An investigation by the lacquer salesman revealed that the air lines were fouled with oil to the point of coming through the gun. Air filters on the compressor and air lines had not been touched in years, and were not in good condition. The regulator for controlling air pressure was not in proper working order. Also, dirt was being picked up from the floor by the fan suction and carried across the work. Had these conditions been completely checked before condemning the finish, there would probably have been no need to have called upon the lacquer salesman for service.

Finish Wrinkled and Dull Instead of Smooth and Glossy

Another manufacturer was finishing oil-burner parts with a one-coat synthetic enamel. Occasional orders were rushed through by force-drying the enamel in a direct-fired gas oven. The finish salesman discovered this condition one day and advised that be-

AS GOOD CHARACTER

is the foundation of sound business

It's the foundation coats that determine the character and durability of furniture finishes.

Build on the proper foundation by using Grand Rapids Wood Finishing Company's **STAINS AND FILLERS** — products developed to the highest standard of excellence over a forty-year period of pioneering and research.

"Everything for Finishing Wood"

GRAND RAPIDS WOOD FINISHING CO.

GRAND RAPIDS, MICHIGAN

THE PERFECTION IN MASKING TAPES

•

PERMACEL

The Paper Masking Tape

JONFLEX

Finely-woven Cloth Masking Tape

INDUSTRIAL

Coarser-woven Cloth Masking Tape

SAMPLE ROLLS UPON REQUEST

THE REVOLITE CORP.
New Brunswick, New Jersey

cause the enamel was a strictly air-drying formula, under no circumstances should it be baked or force-dried. He also pointed out the advantages which would be afforded by using a baking modification of this formula, if a baking finish were desired.

These recommendations were overlooked at the start of the following season's production. Again the air-drying enamel was put into the baking oven for an hour at 200°F.—this time immediately after being sprayed. The finished work showed up full of wrinkles; and where the surface was not wrinkled it was way below the normal high gloss obtained when the enamel had been air dried. All of the work thus finished had to be stripped and refinished.

While this happens to be an unusual case, it should serve to prove that the directions for handling any one product should be carefully observed if the user expects to obtain full advantages of the product.

Separation of Ground Coat

Failure to follow the supplier's directions on methods and schedules for drying is not the only cause for poor results. Use of the wrong thinner can spoil a whole can or drum of finishing material, as happened in the case of a large manufacturer of hand-grained metal cabinets.

The ground coat was a baking synthetic. The supplier recommended a reduction of 10% to 15% with a special grade of thinner, higher priced than the one used universally by this cabinet manufacturer. The universal thinner was not much more than kerosene, but it could be purchased at about one-third the price of the specific thinner recommended. A laboratory test of the cheap thinner indicated that it could be added to the ground coat without apparent difficulty, but reduction with this thinner in the shop spoiled ten gallons of the base coat.

The explanation for separation of the ground coat in the shop, and not in the laboratory, was that in the plant they added 20% of thinner, whereas the laboratory test with the cheap thinner carried the reduction out to only 10%, which was not enough to "kick out" the resins.

Bleeding of Filler into Top Coat

Sometimes the contributing causes of unsuccessful results can not be easily detected. A nationally known furniture manufacturer, particularly critical of evenness in color of the finished work from piece to piece, was having some serious difficulty in getting out a large order with minimum color variation. A certain amount of color variation had to be tolerated because the wood, even if taken from the same car lot, admittedly had some variation in texture and color. Making their own water stain, the question of variation in the stain itself was easily checked. The filler also was carefully scrutinized, but there did not appear to be any doubt of variation here.

Several drums of lacquer had been consumed in turning out the order, but it was impossible to track down which part of the work had been finished with any one drum. The natural conclusion seemed to be that the lacquer had varied in color. The lacquer supplier checked back on the shipments and found that two of the

LARCOLOID

To The Man Who Pays The Bills

If you are interested in cutting your oven costs at least 50%, then, you will be interested in this advertisement.

Today we are recognized by many leading manufacturers as being at the "top of the heap" in the manufacture of synthetic enamels.

Adequate proof of this is the trend, during the past two years, of many manufacturers of various products to adopt LARCOLOID, the perfect 1-Hour Dry Enamel as their standard finish. They bake Larcoloid at 150° for fifteen minutes thereby cutting the cost of oven operation more than one-half and speeding up production in the factory.

Here, then, are two vitally interesting things which we offer every manager and superintendent—cutting cost and speeding production.

It will pay you to learn more about Larcoloid.

Larkin Co Inc. **PAINT DIV., Buffalo, N.Y.**

Manufacturers of Primers, Enamels, Varnishes and Japans

Maehler

FOR JAPANNING
BAKED ENAMEL FINISHING
INDUSTRIAL DRYING
MAEHLER RECIRCULATING HEATERS

Write for Catalogue

The Paul Maehler Company

2217 West Lake Street Chicago

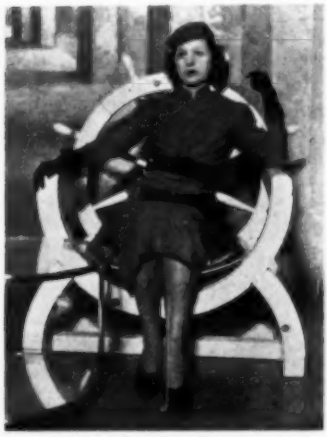
Ovens

drums were from the same batch, and a third drum from another. Record data proved the contents of each was of the same color and clarity.

Not being content to pass the matter over without further investigation, the manufacturer delved into the history of the order while it was going through the factory, particularly the finishing schedule. Investigation from this angle disclosed that where color variation was shown in the finished work, the sealer had been applied before the filler was thoroughly dry. The effect of the sealer on the partially-dried filler was to pull some of the filler color into the sealer coat, and later this color bled into the lacquer top coat.

While this is a most unusual situation, it probably would not have been probed to such depths were it not for the super-critical attitude on the part of the furniture manufacturer in regard to the color of his products. From this example, however, it can be concluded that latent conditions in application have a direct bearing on satisfactory finishing results.

Non-uniformity and failures to obtain satisfactory finishing results have almost no end of divers causes. When finishing troubles arise, clear thinking and keen observation, especially on the part of the finisher, can oftentimes find a simple means of getting the work out without delay and with the materials at hand.



A nautical chair of knotty pine, shown at the Winter Mart in the Los Angeles Furniture Mart. Miss Lorraine Bridges, pretty Metro-Goldwyn-Mayer player, finds perfect comfort in this new type chair. The glass-topped coffee table is two-tiered . . . and is trimmed in chromium.

Galvanized Painting Sheets

A folder describing the advantages of Armco Galvanized Paintgrip sheets has just been issued by The American Rolling Mill Co. of Middletown, O. Paintgrip is a new Armco galvanized sheet metal that is readily paintable without special acid treatments or weathering. Forming qualities, soldering practice, welding, cleaning and finishing operations are described in the folder. Paintgrip is available in base metals of Armco Ingot Iron, copper-bearing steel or plain steel.

New Portable Painting Machines Described in Folder

In a colorful folder, filled with "action" pictures, the Gast Mfg. Co., Bridgman, Mich., announce three new portable spray painting machines. The Gast rotary-type compressor is a feature of each machine. The manufacturer claims that there is absolutely no pulsation of the delivered air, and the complete unit operates entirely without vibration or "bounce."

In addition to the one-quart cup, with which all three models are supplied, the Zephyr Model "A" has a one-gallon tank which provides a paint supply comparable to that of a large, much heavier machine. Gast machines range from 1/6 to 1½-hp.

The Emblem of Quality in Finishes

The Mark of High Standard Products

WALKER'S DURAFLEX FINISH FOR VENETIAN BLINDS—SPRAYING OR ROLLER COATING

—was selected for the Venetian Blinds in the office (pictured above) of the general manager of a large New England corporation.

Because of the beauty of DURAFLEX finishes—the durability, adhesive and flexible qualities—they are giving unqualified satisfaction.

Available in synthetic or lacquer types. Write us for details and prices.

H. V. WALKER CO., Elizabeth, New Jersey
MAKERS *of* FINE FINISHES

The 1937 BURF Air-brush is FAST, LIGHT, CONVERTIBLE

Instant adjustment of Multiplehead from full fan to round. No "split" in spray at any pressure.

Self-centering floating needle eliminates uneven wear. Constant even coverage. Air inlet at bottom of handle or at back of gun. Gravity, syphon, or pressure operation. Write for bulletin C1-37.

Paasche Airbrush Co.

1917 DIVERSEY PARKWAY, CHICAGO, ILL.

Power Turntables

Binks Mfg. Co., 3114 Carroll Ave., Chicago, Ill., announces motor-driven turntables (air motor or electric motor) for supporting and turning articles being sprayed in spray booths.

The article being finished, when placed on the turntable, can be revolved in front of the operator without loss of time or effort by simply pressing the pedal controlling the motor.

By means of an air regulator on the air-operated model, the revolving turntable can be set at any desired

speed. On the electric model the speed is regulated by a variable-speed pulley. The motor is totally enclosed to protect it from paint and dirt.

The handy pedal, giving instant stop and go operation, leaves both of the operator's hands free to handle the spray gun and the object being sprayed without wasting time.

Revolving turntable discs are available in round or square shapes from 8 to 24-in. in diameter. The standard height of the turntable is 30-in., but it may be made higher or lower as specified.

What's New...

Air Cleaning Unit

A new electrostatic precipitator for general industrial air cleaning use, with an operating efficiency as high as 99% by weight, is announced by the Pangborn Corporation of Hagerstown, Md. The unit is particularly suitable for salvaging valuable dust, mass air cleaning, or removing objectionable particles from gas or vapor and similar applications.

The Pangborn electrostatic precipitator, with electrical parts by Westinghouse, has the following features:

1) Small size of unit reduces space requirements and cost, and permits a complete factory assembled unit.

2) Small vacuum tube power pack attached directly to precipitator cab-

For general industrial air cleaning.

SUNBRITE Bronze Powders

SUNBRITE

SMOOTHNESS
+
LUSTRE
+
UNIFORMITY
+
GREATER COVERAGE =
LOWER COSTS and BETTER FINISHED GOODS

THE MITCHELL-MAYER CO., INC.

Complete Industrial Bronze Finishes

3506 MARKET STREET ST. LOUIS, MO.

Let 'er go, Gallagher!

"WE FINISHED 100,000 BRASS ¾-IN. SHOE EYELETS WITH 3 COATS OF BLACK SYNTHETIC ENAMEL TODAY, AND USED LESS THAN ¼-GAL. OF MATERIAL."

"Ain't that something?"

And again, the "Speedip" Whirl Enameler scores in speeding up finishing of small articles, cutting labor costs, saving material . . . . doing a better all-round job of product finishing.

The "Speedip" Whirl Enameler

Can do the same for any concern that has a problem of coating small articles in quantity.

Send us samples to finish.

RONCI MACHINE CO.

45 River Ave. Providence, R. I.

YOU DO THIS!

Mail some items of your make today. We will finish them and return for your minute inspection. You can't lose on such a demonstration.

inet, eliminating the usual separate room for high-voltage generating equipment.

3) Discharged air does not contain appreciable amounts of ozone nor oxides of nitrogen, and may be breathed without irritation of the membranes.

4) May be designed for efficiencies as high as 99% (by weight) and to remove particles as small as one-fifth micron.

5) Operates at lower voltages, permitting use of electronic tubes of standard industrial classification and with lower power consumption.

6) Low and constant air flow resistance through the unit resulting in reduced power and uniform air volume.

The accompanying illustration shows a unit recently built for a large pottery plant for the removal of excess glaze dust from the air. In general, the complete unit consists of three parts: collector cells, ionizing assembly, and power pack. These may be furnished assembled in a standard cabinet, or as parts for assembly in existing duct work or special cabinets.

A New Flexible Finish for Metal Products

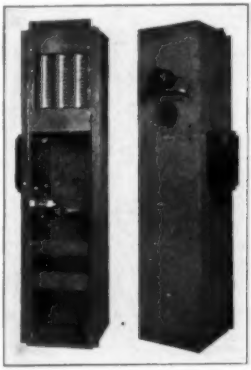
A new flexible finish for high-grade metal products subjected to extremely hard usage, such as golf sticks and fishing rods, has been developed by Maas & Waldstein, makers of industrial finishes, Newark, N. J.

In gloss and wearing qualities, the new finish, which is known as "Duflex," closely resembles the finish produced by extruding or ca[illegible]ting celluloid upon a metal base according to the manufacturer. The cost, however, is lower.

In finishing the metal shaft for a golf club by the Duflex process, the surface is first covered with a primer coat of synpex enamel, which air-dries rapidly and does not require baking before graining. The grain is then applied in the usual manner (if wanted), and both coats are baked. After baking, the product is given five dip-coats of clear Duflex lacquer. The resulting finish, the manufacturer states, has a deep gloss and is very flexible and durable. Any metal or product can be finished by this process.

Recirculating Dryers (Electric)

Electromode recirculating dryers, manufactured by the Electric Air Heater Co., Division of The American Foundry Equipment Co., 555 Byrkit St., Mishawaka, Ind., proved themselves to be invaluable to many



manufacturing and power concerns in inundated sections after the recent flood. Two of the new drying units, recently purchased by the Ohio Power Co., Canton, Ohio, were effectively used in drying out motor parts and other electrical equipment.

In the Electromode recirculating dryer, temperatures up to 400°F. are obtained by means of recirculation. A constant heat within two degrees of any desired temperature may be maintained because of the automatic

THE STANDARD MEDIUM-BOILING SOLVENT FOR NITROCELLULOSE

NORMAL
BUTYL
ACETATE

Good Solvent Power . . . Retards Blushing . . .
Favorable Evaporation Rate . . . Economical

U.S. INDUSTRIAL CHEMICAL CO., INC.

60 EAST 42nd STREET — NEW YORK, N. Y.
Branches and Warehouses in All Principal Cities — *World's Largest Producer of Alcohol Solvents*

SILK SCREEN METHODS
of REPRODUCTION

Fully Illustrated by the Author. Leatherette Binding. Size 5x7½ in. 193 Pages. 98 Illus...... $3.00

THIS new book is intended for Sign Painters, Card Writers, Display Men, Furniture Manufacturers, Novelty Manufacturers, Glass Etchers and For Domestic Use.

Every detail of the silk screen process is presented clearly in detail. All equipment is fully described and its use illustrated. All materials needed in the various kinds of silk screen work are mentioned with respect to their use to advantage. Estimates of costs and prices to charge are given.

Practical Publications, Inc.
222 East Ohio Street — Indianapolis, Ind.

BLOND
FINISHES

FROM RAW
WOOD TO FINAL
FINISHING COAT

The Chicago and New York Furniture markets showed many suites finished with "Spruance Quality" materials. Of particular interest were the Blond suites bleached with Gilco 2-in-1 Odorless Wood Bleach and finished throughout with "Spruance Quality" materials.

Write now for complete information regarding Blond Finishes.

SPRUANCE QUALITY

Specialists in the manufacture of wood and metal finishing Products, Varnishes, Lacquers and Enamels since 1907.

The Gilbert Spruance Co.
RICHMOND & TIOGA STS.
PHILADELPHIA, PA.

thermostatic control incorporated in the design of the dryer. As these drying units depend entirely on electricity for heating, all cumbersome steam lines and return piping are eliminated.

A housing 6-ft. long by 16-in. deep and 15-in. wide contains all of the heating and circulating mechanism, and may be bolted onto the drying room or chamber. Completely insulated throughout and having no exposed hot wires or glow elements, these dryers are entirely safe from explosions or fires.

The elements used are of cast aluminum construction. Heating is accomplished by means of a calrod, around which an aluminum grid is poured. Shrinkage of the metal in cooling causes the calrod to become an integral part of the heating element and eliminates all hot wires and dead air space. These new elements require only one minute to attain full heat, and, due to their aluminum construction, dissipate the heat into the air very rapidly.

Galvanized "Paintgrip" Metal Sheets

Full commercial production of a new kind of galvanized sheet that assures a good paint bond on iron and steel products has been announced by The American Rolling Mill Co., Middletown, Ohio.

Introduction of "ArmcoGalvanized Paintgrip" sheets follows several years of intensive research on the part of Armco's metallurgists and the technicians of the Parker Rust-Proof Co. This new sheet metal can be painted without special treatment of the surface by the user. The sheets are chemically treated to produce a finely crystalline phosphate coating which in itself is neutral to paint (being neither acid nor alkaline) and keeps the paint from direct contact with the zinc surface. This coating is an integral part of the

sheet and is slightly granular in nature.

Armco Paintgrip sheets are available in any of the grades of galvanized sheets manufactured by the company. Analysis of the base metal can be that of Armco Ingot iron, plain or copper-bearing steel. When it is required, all grades of these sheets can be supplied stretcher leveled.

Forming qualities of Armco Paintgrip sheets are the same as untreated galvanized sheets. They may be soldered satisfactorily with the use of hydrochloric acid as a flux.

While Paintgrip sheets shipped from the company's mill are prepared to receive paint without further treatment, handling and fabricating operations in customers' plants will often necessitate cleaning. Organic cleaners such as naphtha, benzine and lacquer thinners are preferred.

If alkaline cleaners are used, the Paintgrip surface will be attacked and partly removed by their action. Because of its crystalline absorbent nature, the surface of a Paintgrip sheet will tend to absorb a certain amount of the alkalies which are difficult to remove. Alkaline conditions under a coat of paint are considered one of the most common causes of early paint failure.

Practically any good paint can be applied to Armco Paintgrip sheets. If baked finishes are used, the paint manufacturer usually recommends a suitable primer. Any good baking system will be satisfactory provided the baking temperature does not exceed 450°F.

Formation of a Paintgrip coating on metal is dependent upon the fact that phosphoric acid solutions will dissolve zinc phosphate within certain definite limits. Passing zinc coated iron or steel products through such a solution results in the formation of the Paintgrip coating which becomes an integral part of the metal surface at the point of solution. Reaction takes place with the

Ultra-Speed

SYNTHETIC FOR WOOD

Dust Free— 7 to 10 Minutes!

- May be rubbed in three hours.
- Finished product ready for shipment in five hours.
- Dries like a lacquer and builds like a varnish.
- Contains 40% solids.
- Gives 40% to 90% greater coverage than lacquer.
- Alcohol proof—does not blush.
- More durable for interior use than lacquer or varnish.
- Has received wide acceptance from leading manufacturers.

SPEEDS PRODUCTION

Costs Less — Saves Time

Write Today for Sample and Prices

HAYNES LABORATORIES
INCORPORATED

Manufacturers of
INDUSTRIAL SYNTHETICS, LACQUERS, STAINS, VARNISHES

Chandler St. Springfield, Mass.

HERE THEY ARE

A family of specialized primers . . . approved in the laboratory . . . proved in service . . . for *magnesium, aluminum* and other metals you can get results with our primers that we defy competition to equal . . . and this at the right price . . . Give our Prime-Cote family a trial by giving us your particular problem.

Prime-cote

THE WATSON-STANDARD CO.

Manufacturers of Specialized Industrial Finishes and Lithograph Coatings for Spray, Dip or Roller Application to Metal.

Factory and General Offices PITTSBURGH, PA.

Warehouses: Boston, Buffalo, Detroit

evolution of hydrogen, continuing until the metal surface is completely converted to a crystalline phosphate coating.

One-Application Bleach

The Lawrence-McFadden Co., 1400 Frankford Ave., Philadelphia, Pa., announces a new product for bleaching wood preparatory to application of the popular blond finishes. It is called Mac's Fashion bleach . . . . to be applied liberally with a clean white rag in one application. Then the surface is allowed to dry and finally it is carefully sanded. The new bleaching material is claimed to be practical, efficient and economical.

S. E. Spray Gun

According to a news release from Sutherland-Abbott, a number of valuable features of design and construction have been introduced in the 14-B spray gun, just announced by

Attractive; efficient; light weight.

the Spray Engineering Co., 150 Central St., Somerville, Mass. The nozzle parts and inner connections are of stainless steel, and the fluid valve design has been improved to make control more fool-proof and accurate. The spreader has stainless steel inserts, and the air valve construction has also been redesigned.

The one-piece gun-body is drop-forged aluminum. According to the

manufacturer, the 14-B is the lightest spray gun on the market. All the good features of the 14-A model have been retained; changes made are in the interest of increased ruggedness, longer life, and freedom from maintenance troubles. All fittings are chromium plated, giving the new gun an attractive appearance.

Oil Colors in Tubes

Du Pont Harrison brand oil colors are now being offered in tubes, E. I. du Pont de Nemours & Co. announces in a circular to dealers. The tubes measure 1x5-in. The oil colors have been put up in this form because the tube is more convenient to handle when only a little paint is to be tinted. They are offered in 24 colors.

Paul Cathcart Joins Jones-Dabney Co.

The Jones-Dabney Co., Louisville, Ky., announces that shortly after the first of the year Mr. Paul Cathcart will join its organization as Divisional Sales Manager in charge of the Grinding Liquids and Synthetic Resins Division. Mr. Cathcart is a graduate chemical engineer, was with the Bureau of Standards for many years, and has been with the Titanium Pigments Division of the National Lead Co. in a technical sales capacity for a number of years.

Unfilled Orders Largest in Seven Years

The Worthington Pump and Machinery Corp., Harrison, N. J., reports that it has entered the new year with the largest backlog of unfilled orders since 1930. This announcement, coming from a manufacturer of a wide range of equipment for the construction, power, water supply, refrigeration, and air-conditioning fields, is taken as a significant indication of resumption of large scale activity in the so-called "durable goods" or heavy equipment industry. Such activity, naturally slow in getting under way in any period of business recovery, is an unquestionable sign of confidence and aggressiveness in those industries which serve the public directly.

LEADING MAKERS OF
SHEET METAL
STAMPINGS
depend on
OAKITE CLEANING

Every year more articles are fabricated of sheet metal stampings. On many of these products, the finest lacquer, enamel or plated finishes are essential. For this quality work, the FIRST requirement is an absolutely CLEAN surface.

It is significant that leading makers of sheet metal products, depend on Oakite materials to give them low-cost, thorough cleaning.

Let Us Help You Improve Results and Lower Costs

You, too, can profit by the improvements and economies that dependable Oakite cleaning materials can establish in YOUR plant. So whatever the problem or cleaning operation, why not let one of our trained service representatives submit his practical suggestions for your product. Write today . . . . no obligation.

Manufactured by

OAKITE PRODUCTS, INC.
32F Thames St., NEW YORK, N. Y.

Branch Offices and Representatives in All Principal Cities of the U. S.

OAKITE
SPECIALIZED INDUSTRIAL CLEANING MATERIALS & METHODS

Filler Trouble on Joints of Steel Vaults

In the manufacture of metal vaults, we weld them with a flash welder. A flash is built up about ½-in. high, and the majority of this is taken off with a chipping hammer; then it is smoothed down with a wheel. The area along the weld is filled with a pyroxlin filler. This type of filler has been used for the past three or four years, but never with what we would say any degree of satisfaction. We have tried pyroxlin fillers manufactured by various paint concerns, and have found some to be better than others.

As stated above, none have been entirely satisfactory. It seems as though we are on an edge; some days they work and others they do not. It is our practice to fill our vaults and let them air dry for a period of three to four hours before sanding. Then a synthetic ground coat is put on and baked at a temperature of 250°F. for a little over an hour.

Now the trouble we encounter is this: The filler blisters the ground coat, which necessitates sending the vault back for refilling and refinishing. We are wondering if you can recommend to us a firm or firms who have had considerable experience in filler, in order that we might contact them to see if they would have anything that would answer our purpose to make this operation more foolproof. The way it is now, we never know from one day to the next whether or not the vaults are coming out of the ovens in good shape.—S. J. Co.

Questions Answers

The trouble you are having is simply that the escaping solvents of the filler break through the quickly-setting film of surfacer, in the process of baking. At the end of three hours the filler appears to be dry, dry enough to sand, but in reality there is a considerable amount of solvents remaining. That the trouble is not encountered consistently is attributable to the fact that in all probability the filler is not always applied in exactly the same consistency, sometimes being worked wetter than at other times. Also, on favorable days, the filler air-dries more completely, causing no trouble to the following coats.

As a remedy, I can suggest three different courses of procedure, the selection of any one of which is dependent on other factors in the finishing department.

The first is to dry the filler thoroughly, either by a short bake or whatever method is available, followed by the ground coat.

The second line of procedure is to apply the filler over the baked primer-surfacer. Then the sanding of the pyroxlin filler, and of the surfacer, can be done in one operation. It is preferable, from an "adhesion" viewpoint, to apply filler over a ground coat, and not to the bare metal. This method is especially valuable if the final coats are lacquer. However, if more baking finishes are to be applied, there is danger of the same trouble recurring, but the

danger is greatly minimized, for the solvents of the filler dissipate themselves in the porous surfacer.

The third method, if it can be utilized, is no doubt preferable. Eliminate the use of the filler entirely by using the synthetic ground coat as a filler. Do you recall my article on the use of heated enamel in December, 1936, issue, pages 18 to 22? I have very successfully sprayed full-bodied synthetic primer-surfacer as it comes from the paint manufacturer, by simply heating it to near the boiling point. It is possible to obtain a very heavy build by this method. Of course, the heavy build should be limited only to the areas that need it, the remainder taking only as much as is necessary. The strange part of it is that when sprayed properly, the heated enamel flows out more, hence, requires less sanding than when sprayed at room temperatures. A little experimentation along this line should give you the most foolproof and economical solution to your problem.—JAMES A. BEDE.

This problem certainly is familiar to me, and easy to solve. Who ever heard of baking lacquer fillers at 250°F., and get away with it? A company (name on request) that I know, is making a synthetic gray heavy-paste knifing filler, second to none, and I have used tons of it. You can bake it 300°F. for one hour or less, or air dry it overnight. It depends on how deep the depressions are to be filled. On these steel vaults I would proceed as follows:

1) Clean the metal with benzine, sand down rust spots and wipe dry.

DON'T pass up these SAMPLES of . . . . . MAC'S FASHION BLEACH

We want to show that it is possible to produce the most definite bleached effect you have ever seen . . and that by

ONE APPLICATION FASHION BLEACH

FOR A TEST: Get these samples and apply to the wood with a clean white rag, a liberal coat of MAC'S FASHION BLEACH.

Permit this to dry for two or more hours, sand and then proceed to finish in the usual way. And so, you produce positive bleaching of woods for the Popular Fashion Bleached Finishes.

SAMPLES to you without obligation

WRITE US!

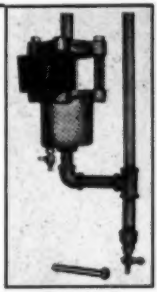
THE Lawrence - McFadden Co.

1400-02 FRANKFORD AVE.

PHILADELPHIA

Headquarters for Fine Finishes Since 1875

SPRING
RAINS
load your
Air Lines
with
Moisture



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are guaranteed to eliminate this trouble and materially improve your Finishing.

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UNIVERSAL FILTER SALES COMPANY

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NUMBER 20
SPRAY GUN

It's
Ahead

Ahead in design—ahead in operating features—the new Crown No. 20 Gun is sweeping the field! New "Uni-Flo" head gives finer atomization, greater speed. Spray width adjustment in combination with pressure control AT THE GUN! One piece Fluid Needle Valve assembly instantly removable. Rugged, yet simple in construction; extremely light weight; accurately balanced to eliminate fatigue. Write today for full details.

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SPRAY GUN
MFG. COMPANY

Warehouses in Principal Cities

1218 VENICE BLVD., LOS ANGELES, CAL.

2) Spray on one thin coat of clear synthetic primer; bake 30 minutes at about 200°F.

3) Fill with knife; air dry overnight, or better, bake at 200°F. for one hour.

4) Sand with No. 180 wet-or-dry sandpaper in water. Wipe dry and spray, and bake at whatever degree you wish. Synthetic fillers are the only ones I know of which can be over-baked safely.

I suggest you order five gallons of synthetic gray heavy-paste knifing filler . . . . and your troubles will be over. I also would prime the vaults before filling, but it is not absolutely necessary.

When you bake filler and have spots here and there which are not perfectly dry, even if not noticeable, a blister will form in such a spot when it is sprayed over (sealed with enamel air tight) and baked. Perhaps a lacquer filler might serve the purpose on vaults if it were baked on before being sealed down air tight with enamel. I have done it before on smaller jobs with success, but always with my heart in my throat. It is risky at the best, and certainly not advisable. — ARMIN FURRER.

This company is using the wrong kind of filler. Pyroxlin filler should never be used on raw steel, as the baking of following coats of enamel will force the oils out of the filler, causing blisters in the finish.

I am sending you a sample filler which I believe will solve the problem. This filler should be applied with a 3 or 4-in. knife; then baked at 225°F. for at least an hour; then sanded and followed by a prime coat over the filler spots; then spray the finish coat.

I would be glad to go to their plant and see their actual working conditions, but this filler should do the job okay. If not, get in touch with me.—MICHAEL FORCHIONE.

I suggest you use a slower drying reducer to cut your synthetic, such as V. M. P. or hydrogenated naphtha, as I believe your trouble is due to the fact that the finish coat sets too fast and draws the pyroxlin filler out, which will react as you are putting on oil or varnish material over a lacquer-base material, and it draws too fast with the heat. I have always used a slower drying and setting reducer, where I have used a pyroxlin filler first. If you still run into trouble, I suggest that you get in contact with ——— who handles all types of filler and base material for that class of work. I would also suggest that you leave vaults out to air dry at least 20 to 30 minutes before going into the oven, so as to give the synthetic a chance to set.—HOWARD FORD.

Letters from I. F. Readers

(Continued from page 9)

Finishing Problem

Perhaps you can help us solve the following problem: We manufacture quantities of small items. The articles nest very close together, therefore, we find it almost impossible to cover all parts by dipping once only in the lacquer. If we use the same kind of lacquer on the second coat, we find that the parts lie so close together that the lacquer dries very slowly, and before it does dry it has softened up or dissolved the first coat. What we desire is a lacquer to be used on the second coat that will not dissolve the first coat.—S. S. Co. (Stem Winding Toy Watches).

BETTER FINISHES

—for Furniture

Satisfied customers are our best advertisers. Last year a number of furniture manufacturers changed to LEO-LAC LACQUERS and SEALERS. The reason is packaged with the material.

—for Metal and Hardware

Our Clear Metal Lacquers and Flat Blacks for Builders and Drapery Hardware manufacturers are unsurpassed.

If you are interested in better finishes—yet economical, send your letterhead and tell us your specific problem and we will make our recommendations.

Leon Finch, Ltd.

750 East 59th St.

LOS ANGELES, CALIF.

Lot of Horse Sense

Am pleased to enclose $2.00 for a year's subscription to INDUSTRIAL FINISHING. Kindly start this with your Feb., 1937, issue. There's a lot of horse sense in this book, and I want it every month.—A. D. Patten.

Reflecting Paint

Can you give us the name of some manufacturer of a paint or paste that will reflect brightly to the beams of automobile headlights? Any information will be appreciated.—A. Sign Co.

We have given this company the names of several manufacturers of luminous paints.—Ed.

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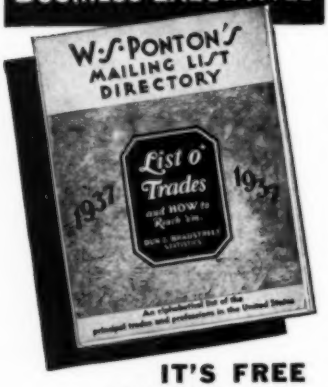

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NEW YORK

Centrifugal Machine

Some time ago we read in your magazine of a new centrifugal machine for coating small wood and metal parts. One of our customers, I think is interested in this type of machine. Will you ask the manufacturers of this machine to get in touch with us and send us any descriptive literature they may have, and we in turn will pass it on to our customer.—M. C. Co.

Two makes of centrifugal coating machines are advertised in this issue.—Ed.

Water-Repellent Finish for Fabrics

We are in the market for a liquid to be applied on cotton and celenese goods, to make these mildew proof and water repellent. Please give us any information you have in regard to this process.—M. P. Co. (Curtains, Shades, Blinds).

Wardrobe-Vanity

On page 10 of INDUSTRIAL FINISHING for February, you illustrate a wardrobe-vanity with convenient railed glass shelves inside the doors, etc. We would appreciate knowing the manufacturer of this product, as we deal in this class of merchandise and believe we could sell them if the quality and price are satisfactory.—G. R., New York City.

It's a product of Karges Furn. Co., Evansville, Ind.—Ed.

Straw Hat Lacquer

We are interested in the purchase of a waterproof clear lacquer for spraying straw hats and will appreciate it very much if you will refer this inquiry to two or three manufacturers that are well known to you, and that make this item regularly. Kindly ask them to give us complete information and lowest prices, and also send us a sample of the material they offer.—D. Q. S.

Antiquing; Blonding

We are interested in information about the "pickling" of antique furniture and the "blonding" of new furniture.—R. K. Furn. Co.

Who Knows About "Emailliola"?

In a magazine called "Armchair Science", published by the Conde Naft Publications Ltd., 1, New Bond St., London, W.1, we read the following statement:

"Emailliola is a new cellulose enamel now marketed, which is insoluble in water, benzol, benzine, alcohol, turpentine and acetone; also, non-inflammable and resistant to weathering, acids, alkalies and rubbing."

As we are interested in finding a cellulose enamel having all the qualities mentioned above, we shall be glad to know if you have any knowledge of it.

If you know the name of the suppliers, we should esteem it a favor if you would kindly put us in touch with them. — Kleen-E-Ze Brush Co.

Lithographing Work

In one of your issues of INDUSTRIAL FINISHING, we recall an advertisement from the Goes Lithographing Co., showing some of the lithographing work placed on table tops. We are wondering if you could give us the address of this company, as we would like to write them and may use some on panel beds.—K. Metal Bed Co.

The address is 44 W. 61st St., Chicago, Ill.—Ed.

Stencils for Graining

We are wondering if you have in your files the name of a manufacturer of stencils to reproduce the grains of various woods with a spray gun? These stencils are placed over gum woods and sprayed to reproduce mahogany, walnut, maple, etc. Could you assist us in this matter?—O. N. S. Co. (Rubber Stamps, Stencils).

Nevillite—Clear Resin

The Neville Co., Neville Island Post Office, Pittsburgh, Pa., announces an unusual new resin known as "Nevillite"—a crystal-clear thermoplastic hydrocarbon resin. An interesting and informative folder describing Nevillite has been prepared to be sent to concerns interested.

Enameler's Dictionary

The Ferro Enamel Corp., Cleveland, Ohio, has just published "The Enameler's Dictionary," compiled by Kenneth Hossack of the Ferro Enamel Corp., wherein shop and trade terminology is listed alphabetically and defined clearly. The book contains 80 pages 3¼x5-in., bound with spiral binding between brown leather-grained covers. It is said to be the first publication of its kind.

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Better than anything else for repairing imperfections in wood, marble, etc. Made in 70 colors to match all finishes. Write for FREE Color Card and descriptive Booklet.

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EDITORIAL

What's Mostly in Demand

Highlights of the inquiries recently received by INDUSTRIAL FINISHING indicate special interest in bleaching materials for use in lightening the color of woods preparatory to finishing in blond tints; silk screen stencils and process paints, striping and dot-marking tools, dip finishing equipment, materials that equalize the varying colors of woods in built-up or assembled articles, finishes that produce a polished metal effect, alcohol finishes for wood, heat-resistant finishes for metal, lacquer for rubbing, aluminum finishes, furniture polish, repair putties, etc.

Fortunately there are reliable sources of supply for all of these materials, supplies and tools, and those making the inquiries have been referred to them. INDUSTRIAL FINISHING is in position to learn about the new and improved finishing materials and equipment being developed to meet the requirements of concerns that have difficult and unusual finishing problems, and we welcome opportunities to answer our readers' inquiries.

In some cases, however, the items inquired about are advertised in the current issue of the magazine, therefore it is suggested that the advertising pages of several issues be examined closely when something special is desired. This may be the means of saving time in getting what is wanted.

Standardized Colors for Housewares

Standardization of colors for housewares, particularly on articles used in kitchens and bathrooms, has recently moved an important step nearer actual realization. A committee of the National Retail Dry Goods Association selected and recommended the following: Housewares or kitchen colors are green, red, blue (two shades, light and dark), ivory and white. Bathroom colors are green, royal blue, ivory, orchid, maize, white, black and dubonnet.

In announcing this selection, the chairman emphasized the fact that the committee is not trying to force these colors upon the

trade, but rather this is an attempt to establish a basis for voluntary cooperation on those colors having the greatest general consumer acceptance throughout the entire country, so that it may be possible for stores to offer truly ensembled colors in all classifications . . . .

A survey of the 14 colors selected showed color variations on the shelves of New York stores ranging from a minimum of eight different greens to 11 different blues. In order to obtain the greatest acceptance, the committee contacted the 11 regional chairmen of the Housewares Group and asked them to contact the manufacturers and buyers in their respective districts and select those colors which they felt were the most desirable and practical. A tabulation was then made . . . . There was a remarkable unanimity of opinion on the various colors selected, which shows that color standardization is not impossible. Manufacturers all over the country manifested an interest and desire to cooperate in this very much needed color standardization work.

This cradle-shaped bed is made of northern hard maple with a warm light finish. It was a best seller among new bedroom suites shown at the Winter Market in the Los Angeles Furn. Mart. Manufacturer: Wm. J. Jaeger Furn. Co., Los Angeles.

The chairman recommended that a permanent committee be set up which would keep in touch with manufacturers and buyers all over the country, and which would be sensitive to color style changes, and would from time to time review and, if necessary, redesignate those colors having the greatest general acceptance . . . . It was advised by the committee that it would be defeating the purposes of color standardization, in the kitchen colors especially, by making color changes too often or too easy, and in addition frequent changes would work a hardship on customers who were gradually buying merchandise to a definite color scheme, to say nothing of losses to manufacturers and retailers. The public is now much more color conscious and therefore more critical than ever before.

Give New Products a Fair Trial

Many new developments in materials, supplies and equipment are being offered, practically all of them by reputable manufacturers who have spent a great deal of time and money in making these products workable and of real value to the industry. Every new thing offered is an answer to some practical need that has appeared numerous times and has been recognized by experienced men. If you have use for it and decide to try it, we suggest that you put aside any critical or skeptical ideas and give it a fair trial, just as you would give a new employe or new executive a reasonable length of time to be-

come adjusted to the peculiar and special conditions and requirements existing in your establishment.

New things do not always work perfectly at first. Even a new automobile requires a careful "breaking in" if it is to give satisfactory service later. In trying out a new product it is important to: 1) Give special attention to the manufacturer's directions; 2) use good judgment in trying out the product, and 3) favor it by using it under ideal conditions at first.

Sometimes the salesman or company representative who sells a new product makes exaggerated claims for it, or he may not be accurately informed about its possibilities and limitations in the various industries. A fair trial over a reasonable length of time should demonstrate whether or not the new product is satisfactory for the work at hand, but before it is rejected, the manufacturer should be consulted directly and given an opportunity to check into the product's performance. If successful service is obtainable from the product, then both the manufacturer and the user will gain by it; if not, both lose.

Better Equipment, A Profitable Investment

When a man who owns a used car sets his mind toward buying a new automobile, he can think of all kinds of good arguments in favor of the purchase—and yet the car is mostly a pleasure proposition. But that same man, in the capacity of executive of a manufacturing establishment, is too often very reluctant to authorize the purchase of a new piece of equipment for the plant, so long as there is any possible way of getting along without it. And yet the plant equipment is used probably 100% as a substantial aid for making profits.

Production equipment, such as machines, tools and various accessories, wears out, gets out of date and becomes very unprofitable to operate, just the same as an automobile, but frequently the executive who signs purchase orders isn't close enough to its operation to appreciate or realize the fact. Too often he doesn't know about it ever being down for repairs, or spoiling some work, or wasting some material, or failing to perform satisfactorily and economically, or being so far behind the performance of certain new equipment which should replace it.

With the probabilities of an increased volume of business coming to most of the manufacturing establishments, it is timely for executives to give this matter of new equipment serious consideration. Make a careful appraisal of

the efficiency of all the equipment you have, and compare it to the possibilities and performances of the latest equipment available for your type and volume of work. You may be surprised to learn how much more rapidly and cheaply your workmen can do a certain amount of work with the same or less overhead expense—not overlooking those important factors of added cleanliness, safety and convenience. Some kinds of new equipment will quickly pay for itself, once it is placed into production.

Why You Need Good Air Separators

Editor's Note: These points from the letter of a manufacturer of improved air separators reveal some things of interest to those who use and those who should be using efficient air separators to clean the compressed air employed for their spray finishing.

The thing we should like to see pointed out is that the air separator:

1) Saves rejects.

2) Saves cost of buffing, cleaning and respraying.

3) Saves slowing down of spray line conveyors, because it eliminates blushing by keeping the compressed air free of moisture.

4) Eliminates blistering by keeping the compressed air free of oil and water.

5) Prevents spotting by keeping the air free of oil.

6) Is far more effective than any of the older water and moisture traps that have been used in the industries for various processes.

In presenting the improved separator to manufacturers who have had expensive and annoying experiences with humid weather, in attempting to spray lacquer on their products, it would be very foolish for us to attempt to proclaim a cure-all for all difficulties, as the majority of the manufacturers will have had enough experience to pick out false claims immediately.

The above is said by way of introducing a comment to the effect that merely filtering the condensed moisture and condensed oil vapors from the compressed air will not guarantee a lacquer finish that is free of blushing, blisters and spots; for in addition to this, it is necessary that the surface to be sprayed is absolutely clean, free of grease and completely dry. To be absolutely dry it is necessary that the temperature of the metal surface to be sprayed is not below that of the spray room. It can be readily seen that if the temperature of the metal were below that of the spray room, even though the metal should be perfectly dry when it entered the room, as soon as it entered the warmer room the moisture in the room on a humid day would condense on the metal and consequently the metal would be moist when sprayed.

In order to eliminate all difficulties then, it is necessary that all grease, all solder flux, and any other foreign substance be removed from the metal surfaces. Also, the spray room should be air-conditioned or some means should be provided for heating the metal surfaces just before

they are sprayed. In our plant we accomplish this by sending our conveyor line through a heating oven, so located that the products travel only a few feet after leaving the oven until they reach the spray booth. This means that they are completely dry at the time the lacquer is sprayed on them; and, as the lacquer is absolutely free of any moisture or oil that might otherwise have been carried into the compressed air stream, the finish we obtain is practically perfect; our percentage of rejects because of improper finish is practically negligible.

Some years ago, closing down the spray room was a regular thing on hot humid days; also, frequently on days of high humidity in the spring. For several years, however, our spray room has suffered no interruption whatever due to weather conditions.

Another point: We do not recommend attaching the air separator close to the compressor. On the other hand, it should be connected just as close as possible to the point where the compressed air is used, so that the condensation which takes place in the air lines can be removed.

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Sprayed Molten Metal Coating Process

The Metals Coating Co. of America, 495 N. 3rd St., Philadelphia, Pa., originators and developers of the sprayed molten metal coating process (Schoop), offer their pocket size 6-page file folder No. 1207, entitled "Railroad Uses for MetaLayeR." Halftone photographs and illustrations of typical sprayed molten-metal coating operations, both for maintenance and production, with effective savings in railroad shops, are included.

Du Pont Laboratory Enlarged

To meet increased requirements brought about by a larger volume of business, the Technical Laboratory of the Organic Chemicals Department of E. I. du Pont de Nemours & Co., at Deepwater Point, N. J., has been enlarged by the addition of approximately 50 percent more space, it is announced. The addition will facilitate the testing of dyes and make possible even more comprehensive and thorough treatment of the problems presented to the laboratory. The Technical Laboratory is a service organization connected with the dyestuffs sales division and is devoted to the solution of problems in the use of color which confront the company's customers.

Free Book on Aluminum Paints and Painting

Now, according to a book just published by Aluminum Industries, Inc., Cincinnati, Ohio, the unique advantages of aluminum paint have been extended to the specialized requirements of all types of maintenance and general product painting—and

with an aluminum paint supplied in convenient, completely ready-mixed form.

This 45-page book contains many interesting and attractive illustrations, along with a report of this outstanding development in aluminum paint and an outline of the requirements of different forms of maintenance painting—interior and exterior walls, ceilings, stacks, tanks, heated surfaces, etc. The proper type of Permite ready-mixed aluminum paint to use for each purpose is described and illustrated. Included also is an interesting chart showing the types and physical properties of Permite ready-mixed aluminum paint for different applications, such as the oil length, viscosity, drying time, baking time, percentage of thinning required, etc. Any maintenance or production executive should find considerable helpful painting data in this new book.

A copy will be sent free of charge and without obligation to any executive who writes on his letterhead to Aluminum Industries, Inc., Cincinnati, Ohio, and mentions this publication.

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INDUSTRIAL FINISHING SALES REPRESENTATIVE

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Large National Paint, Varnish and Lacquer Manufacturer has Pacific Northwest territory available for experienced salesman for furniture industry. Give complete details in confidence. Our men know of this vacancy. Address IF-650, care Industrial Finishing.

WANTED

By a well-known industrial Varnish Lacquer and Enamel manufacturer —A man to represent them in the North Carolina-Virginia area. This man must be well known to the furniture manufacturers in that territory and have a thorough knowledge of the art of wood-finishing. A man with a foreman-finisher's background preferred. Drawing account and expenses plus a commission basis. Address IF-649, care Industrial Finishing.

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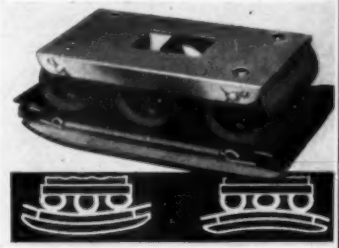

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